EDI and Electronic Commerce Program

EDI Reporter
INTERNATIONAL

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INPUT® EDI Reporter INTERNATIONAL

A Monthly Publication from INPUT's **EDI/Electronic Commerce Program**

Vol. 7 No. 1 January 1992

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National Data Corporation Offers EDI Services to Banks

National Data Corporation is offering an EDI network service to banks so that banks, in turn, can offer EDI and EDI/EFT payment services to their clients. **Mercantile Bank St. Louis NA** is NDC's first customer.

Although NDC's global network service supports all kinds of EDI transactions—purchase orders, transportation documents, etc.—it is nevertheless focusing on financial EDI services. NDC is already well established in the financial and retail sectors.

NDC already has over 300 U.S. banks (including the majors) on its network. It has 350,000 retail merchants and over one million retail locations on its network (performing electronic draft capture and credit card authorization). And it has 70% of the nation's pharmacies on line (for which it performs insurance claims processing).

NDC's network is also used for traditional financial services such as cash management and electronic tax payment.

With this installed base, NDC is leveraging its network to provide more value-added services to its bank clients and their clients.

For example, NDC can equip a retail store's POS terminal—used for tracking inventory—with other capabilities, such as balance reporting, cash concentration, tax payments, payroll, payment to suppliers, and immediate re-ordering as merchandise is sold.

NDC will first offer Global Exchange as a shared service for bankers at a cost of $25,000 per year. Banks will then charge their customers a transaction fee.

Industries it will focus on first are financial services, electronic

Continued on next page

Bank EDI. . . from page 3

tax payment, retail, petroleum (particularly at gasoline service stations/convenience stores), government programs, and health care.

NDC's network is driven by **Tandem** computers and supports X12, TDCC, EDIFACT, NACHA, BAI and SWIFT standards.

NDC expects Global Network to be fully functional by mid-1992.

Analysis: NDC has a better shot at becoming the nation's premier EDI/EFT network than do individual banks or bank consortia. A nationwide, unified electronic payment service provider is a necessary piece of electronic commerce infrastructure that has tantalized but eluded the banking industry for the past five years. A handful of banks are trying to pioneer EDI/EFT services to their corporate clients. Unfortunately, they have not been successful, because:

- Due to interstate banking restrictions, there are too many banks in this country to allow any one bank to attain the payment volumes that would make an EDI/EFT service profitable.
- Due to the large number of banks (14,000) there is not a uniform electronic capacity throughout the system that enables any corporation (and its attendant bank) to pay any other. A viable electronic payment system requires all banks to be able to speak to each other in a standard and effective way. Such a system doesn't exist today. The desired corporate payment format (the CTX) is technically too sophisticated for most banks and, consequently, is used by only about 50 banks.
- These days, banks have their hands full of problems more pressing than devising and launching an EDI/EFT service.

NDC is well positioned because it is a service provider to banks. It can be the outsource vendor to many banks and attain the volumes necessary for a service to be profitable. Also, with its enormous network of corporate, bank and ACH connections—literal network connections—it is well suited to the task. From a per-transaction operational cost standpoint, it is probably the lowest cost provider of funds transfers outside the ACH.

Source: Bob Murphy, Director of Communications, (404) 728-2502. ■

Stockholder Systems Introduces ACH Clearinghouse Product

Stockholder Systems, Inc. has a new software product that allows a bank offering ACH processing services for correspondent banks to set up an electronic mailbox and activity reporting facility.

The processing bank using the Correspondent Bank Information System (CBIS) can electronically notify each of its correspondent (client) banks of the ACH transactions processed for the correspondent. The data is provided in both NACHA and report formats. Correspondents can also enter ACH return requests to send to the processing bank. Correspondents can access the CBIS using a microcomputer.

Correspondent banking is a relationship in which large "upstream" processing banks supply smaller "downstream" correspondent institutions with such services as loan participation, check clearing, wire transfer, currency availability and cash management. SSI's CBIS product enables the processing bank and its correspondent banks to communicate the ACH information.

The CBIS product requires the processing bank to have SSI PEP or PEP+ software products. These mainframe software systems allow financial institutions to electronically process transactions through the ACH network.

There are over 600 licensed sites of SSI's PEP products. Together with SSI's micro products and new Corporate Automated Payment System, the company has over 1,400 customers using its software for wire transfer, cash management, electronic funds transfer, check processing, information distribution, security holder recordkeeping, mortgage origination and servicing, lease accounting, safe deposit box accounting and loan recovery.

SSI is a wholly owned subsidiary of **NYNEX**. ■

ACH Reports "Pivotal Year" for 1991—Growth Up by 20%

The Automated Clearing house (ACH) Network—the nation's largest electronic payments system—reported record growth in 1991. The ACH is a patchwork of regional and a few national banking networks that allows banks to move funds amongst themselves. The network handles several kinds of funds transfers, all of which are either consumer or corporate transactions.

Consumer transactions include prearranged payment and deposit (PPDs), such as direct deposit of payroll or automatic payment of insurance premiums; machine transaction entries; customer-initiated entries; point-of-sale; and shared network transactions.

Corporate transactions include intracorporate transactions—where a single corporation wants to funnel monies from several accounts into a single one, or vice versa—and intercorporate transactions, in which one company pays another. The formats here are cash concentration and disbursement (CCD), CCD+, corporate trade payment (CTP), and corporate trade exchange (CTX). The CCD format was the original format; the others differ from it only in the length and flexibility of the free text that can be sent along with the payment instruction (which explains what the payment is for).

The **National Automated Clearinghouse Association** (Herndon, VA), the administrator of the ACH, reports that in 1991:

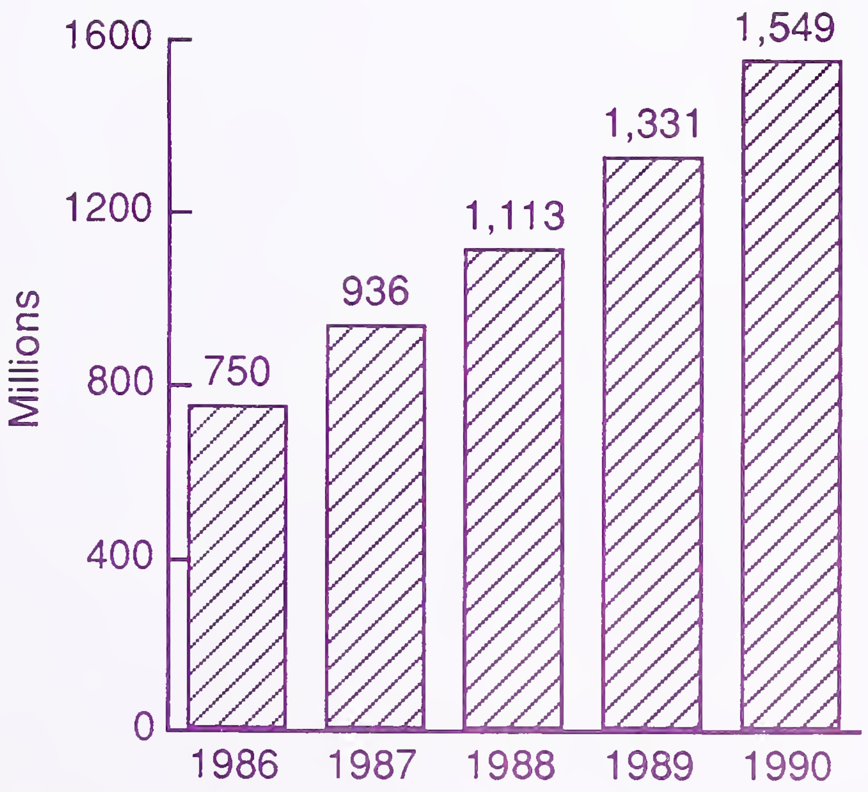
- Over 100,000 companies originated ACH transactions (both consumer and corporate), more than double the number of five years ago.
- Total ACH volume reached 1.5 billion payments, with commercial payments accounting for 1.03 billion (the first time commercial payments exceeded one billion). Exhibit 1 depicts the volume growth for the ACH. (Note: for the first decade of the ACH's existence, the predominant use was for consumer payments).
- Commercial payments in 1990 grew by 22 percent, and the annual growth rate for all ACH payments increased 16 percent.
- The average annual growth of ACH credit volume surged from 12 million to approximately 30 million transactions per year, while annual increases in debit volume have remained relatively flat.

The use of some ACH products grew at a much faster

Continued on page 6

Exhibit 1

ACH Volume



CAGR = 16%

Volume by calendar year. 1991 figures not available at time of printing

EDI 1991—Year in Review

Perhaps the Gulf War and the recession made 1991 a quieter year in EDI than previous years. Nonetheless, in 1991 EDI users and vendors made steady progress. As in every January issue of the *Reporter*, INPUT recapitulates the prior year's EDI developments.

Product Innovations

ACS/Premenos' introduction of EDI/e, a new EDI development language.

Facsimile systems that integrate with EDI: bar coded purchase orders; fax boards that transmit binary files.

New Applications/ Industries

The health care industry established the **Health Care EDI Association** with an initial membership of 22 multihospital groups representing some 4,500 hospitals and 70% of all hospital purchases in the U.S. Health insurance standards designers got their own X12 subcommittee. Membership swelled to the hundreds, from nothing in 1989.

Environmental and occupational health EDI got a boost with the founding of the Environment and Safety Data Exchange (in the Fall of 1990) to bring software vendors, users, and regulatory bodies into an EDI trade group.

An electronic commerce program was launched by the military. The head contractor, **Lawrence Livermore National Laboratories**, sought to unify commercial VANs and set up an interconnected bulletin board and EDI network.

The agribusiness sector began adopting EDI with AgriData Resources (now **ARI Network Services**) services to connect equipment manufacturers and their distributors/dealers.

Grocery EDI users pushed to a new phase of EDI with the promotion announcement message format.

EDI/EDT tax payments picked up steam with the development of new standards (see Standards, below).

Product Introductions

GE Information Services launched Retail*Talk in July, a network service for companies in the retail apparel industry. Retail*Talk allows players to communicate with each other using EDI and E-mail, provides access to data bases (particularly the GEIS UPC*Express catalog), and allows a single company to maintain a private messaging network (for employee—particularly sales personnel—communication).

Pacific Bell launched RealtyLink—combining, in one service, videotex, computers, facsimile, and telephones. Pacific Bell is approaching real estate boards in California with the package, hoping to link brokers, real estate boards, financial institutions, insurance companies, appraisers, and title companies, allowing them to retrieve essential information and communicate instantly via numerous media.

National Data Corporation launched NDC Global Exchange, an EDI service that banks can resell to bank customers. Mercantile Bank St. Louis NA was the first customer (see story this issue).

BT North America expanded its U.S.-based EDI*Net VAN services throughout Europe. All transmissions within this single, unified network domain have a single price schedule; there are no interzone charges.

IBM Information Network launched its Software Mall, where software vendors of IBM compatible software can set up bulletin boards, data bases of product specifications, operations manuals, software updates, E-mail boxes, and on-line ordering facilities on the Information Network to faciliate communication and commerce with their customers.

Acquisitions & Finance

The $3 million (fiscal year 1991) **ARI Network Services**—formerly AgriData Resources—went public, raising $24 million. **Sterling Software** purchased **Control Data Corporation's** Redi*Net EDI network service.

AT&T completed its acquisition of **NCR**, which could have a huge impact on the electronic commerce and EDI market. NCR is a dominant force in point-of-sale and automatic teller machines and transaction-oriented computing, especially now with its acquisition of **Teradata**, the multiprocessor data base machine manufacturer.

Foodcom, traditionally focused on the grocery industry, changed its name to **EDI Able** and is going after other industries.

GTE, with a value-added EDI service for hospital/health claim processing, formed an alliance with **Sterling Software ORDERNET**, the predominant EDI VAN in pharmaceutical distribution.

Global Logistics Ventures, a joint venture between **AMR** and **CSX**, launched a logistics service connecting multiple carriers and shippers using EDI.

Sterling Software acquired **National Systems Corporation**, an EDI/EFT software supplier.

Electronic Data Systems acquired **SD-Scicon U.K. Ltd.**, one of Europe's largest computer services companies and a leading EDI software maker. The $272 million acquisition of the $400 million company gives EDS a broad base of British and French customers. However, SD-Scicon has been losing money for years. SD-Scicon manages information services for General Motors' British, German and Spanish operations.

Standards

X.400. An X.400 protocol for EDI messages (whether X12, EDIFACT, or other) was developed and is called X.435. With this communication protocol, EDI messages can be sent through any X.400-compliant system or network of systems.

X.500. The North American Directory Forum, whose members consist of value-added networks, telephone companies, and the U.S. Postal Service, initiated an experimental X.500 directory of E-mail addresses.

Health care standards. The Health Care EDI Corporation, the ASC X12 organization, pharmaceutical companies, and service providers moved toward standardizing all health EDI on X12.

U.S. EDI User Expenditures

Delivery Mode	1990 ($ M)	1991 ($ M)	1990-1991 Growth (%)
Network Services	123	148	2
EDI Software	42	48	17
Prof. Services	31	35	13
Total EDI Market	196	231	17

The insurance claim format (837) and the claim payment order (835) were placed in draft (usable) status. The Medicare formats (UB80 and HCFA 1500) are to be replaced by X12. Material management/hospital supply ordering is moving away from proprietary and NWDA formats to X12 formats.

The telephone bill invoice. With a handful of pilot projects, the X12 811 telephone service invoice is in use.

Tax filing EDI/EFT standards. The year 1991 saw the initiation of the 826 transaction set (tax reporting among government agencies), the 813 (the electronic tax return), and the TXP format, which is an addendum format used in conjunction with the CCD+ and the X12 820 payment-remittance advice transaction.

Business modeling. A committee of the International Standards Organization (ISO) released a document attempting to provide a generic model of a business in relation to its environment. The model attempts to identify universal communication requirements among organizations, to enable EDI standards designers to develop comprehensive, non-redundant message formats.

Automatic identification/bar codes. The Federation of Automated Coding Technologies (FACT) released guidelines to unify bar-code standards worldwide, particularly those relating to product and company identification.

Demographics:

Overall, the revenues received by EDI software and service vendors increased 17% from the beginning to the end of 1991, from $196 million to $231 million.

Number of U.S. EDI users increased by 5,000. ■

Pivotal Year...from page 3

percentage rate than the overall growth of the network.

- During the second quarter of 1991, the surge in the number of ACH financial electronic data interchange payments pushed the annualized EDI growth rate to 96% for some corporate payments.
- Direct deposit of payroll has increased more than 50% since 1989.

ACH Network to Provide Limited E-mail

In 1991, the NACHA Rules and Operations Committee initiated a rule change that will allow companies to use the ACH network to send remittance data without an instruction to transfer funds. Companies can use this option to send notes regarding payments and references to other EDI and EDI/EFT messages. This so-called "zero dollar payment" option (because the field in the ACH message that would normally specify a dollar amount to be paid is zero) will go into effect in April, 1992. ■

Macy's May Become First Big Outsourced EDI Operation

Macy's department stores does EDI with 80 vendors and 12 transportation companies. The vendors represent 20% of the chain's buying business. More than half of this EDI traffic is not purchase orders, but sales data (in the 867 product activity format) sent to vendors that drives model stock and automatic replenishment systems.

The store management's decision to outsource all IS functions put a damper on the store's EDI plans. All DP applications—POS, accounts payable, MPS, etc.—are to be leased from a third-party outsourcing vendor, the **Sabre Group** (Atlanta, GA). Making the transition to this new scenario has diverted management's attention from moving forward with the EDI program and getting new EDI trading partners.

Nevertheless, the outsourcing strategy will include EDI because the applications that interact with EDI translation software come under the purview of the outsourcing contractor.

Macy's move is in accord with a larger trend of outsourcing and EDI taking place in MIS departments in all industries in the economy. What is the relationship between these two trends? **Bill Plumb**, president of **Sterling Software ORDERNET**, sees it this way:

"I see EDI service bureaus arising to take over the function of EDI for some organizations. These service bureaus will go beyond current VAN services to provide a complete, self-contained, "EDI Department" for their customers." ■

Nordstrom Pursues E-Mail-to-EDI Transition

Nordstrom (Seattle, WA) was later than other large retailers in setting up an EDI program. The personal-touch culture of the company made the adoption of UPC scanning and tracking a low priority. It does not scan merchandise. It does not use scannable ticketing (even though many of its vendors provide premarked merchandise). Nordstrom will be converting to scanning and EDI systems in 1992.

Nordstrom initiated an E-mail network with its vendors last year. The network is intended to bring better communications between buyers and sellers, particularly where multiple Nordstrom buyers for a single product category deal with a single manufacturer (for example, in the case of shoes). Buyers do not place purchase orders over the network (POs are still sent on paper through the postal service). Yet the network is tied into Nordstrom's purchasing and accounts payable applications. Vendor representatives are enabled to check the status of orders and invoices.

Nordstrom deals with 14,000 active vendors, 150 of whom account for 50% of its business. By mid-1992, Nordstrom expects to be conducting EDI with its key vendors. Approximately 300 of its vendors are on the E-mail system V.I.P. Express. Altogether, the system maintains 3,000 mailbox addresses, most of which are Nordstrom buyers and other personnel. ■

News Bits

Sears Communications Company is offering a one-day "Understanding EDI" course every month in Schaumburg, Illinois. The course costs $395 per person.

The principal gas and electric utility of the state of Colorado, **Public Service Co.**, finished an EDI pilot project with EnerNet Corporation, a Houston-based information services company, and three natural gas marketing companies. The project used GAS*FLOW, the natural gas industry's EDI standard, for requesting and scheduling natural gas deliveries to the utility through pipeline networks.

Health Services Corporation of America (HSCA), a purchasing organization for hospitals and other health care providers, is recommending that its members use Sterling Software ORDERNET as their EDI network service provider. HSCA accounts for nearly $1 billion in annual purchasing volume.

St. Paul Software, has made its EDI translation software, Datatran, available for **Hewlett-Packard** 9000/800 series computers, **MIPS** 2000/3000 computers, **Texas Instruments** 1500 series, and **Altos Computers** (which run on Intel 386 and 486 microprocessors).

The Council of Logistics Management has published a new book: *Improving Quality and Productivity in the Logistics Process*. Cost: $30. More information: (708) 574-0985.

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Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

May 11-13, Sheraton Seattle Hotel and Towers, EDI '92, Seattle, WA, DISA, (703) 548-7005.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530; fax: 38-64-214-458).

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

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INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services.

Formed as a privately held corporation in 1974, INPUT's clients include more than 100 of the world's largest and most technically advanced companies.

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9 ...... Transaction Analysis and EDI: The New Business Environment

10 .... Sears and INFONET Link EDI Networks

Thinktank to Offer EDI and Electronic Commerce Network Services and Software

In March, the **Microelectronics and Computer Technology Corporation**, the Austin, TX-based and corporate-sponsored research center, will make available a value-added network that will support EDI and other interorganizational applications, such as concurrent manufacturing.

MCC, as the corporation is known (the acronym doesn't exactly fit the name), is offering this network service as part of its Enterprise Integration program, a research program inaugurated about one year ago and publicly announced last November.

MCC is a corporate research consortium that was founded in 1983 to combat **Japan's Fifth-Generation Computing Project**. Corporate members pay a membership fee (either a one-time fee of $250,000 or an annual fee of $25,000) and, in return, share in the research that is generated. Admiral **Bobby Ray Inman**, formerly director of Naval Intelligence, was the original director of MCC.

The Enterprise Integration (EI) program (see Exhibit 1) is intended to work with companies, other corporate consortia (such as **Sematech**, the semiconductor consortia), government agencies (particularly defense agencies), and standards bodies. Through working groups and pilot projects, the EI program wants to develop:

Thinktank. . . from page 1

- *Network Services*—MCC will administer a production (not just an experimental/research) value-added network. The network will allow users to communicate EDI messages, exchange CAD/CAM documents for concurrent engineering purposes, gain access to on-line catalogs, send E-mail, and share information on EI activities, research, and standards developments.

- *Technology Development Projects*—MCC will develop software and other technologies that support enterprise integration. According to **Bob Wilson**, Business Development Manager, this includes EDI translation software, protocol and file-format conversion software, and E-mail software at the user site. One of the first projects will be development of X.500 directory services.

- *Standards Projects*—According to MCC literature, there will be a group that "will develop, coordinate, and define important metrics, standards, and infrastructure development tools (i.e., models, architectures, and protocols). Standards projects will reside either directly at MCC or at MCC's standards subsidiary. The standards subsidiary, currently being formed, will provide laboratory facilities and technical expertise to companies and standards organizations to accelerate the development and implementation of standards." MCC has mentioned specific standards that it wants to work on and interface with the relevant standards bodies: CALS, EDI, PDES (graphic exchange files), X.400, X.500, ISO Development Environment, Open Distributed Processing, Computer-Aided Manufacturing International, the CAD Framework Initiative, and the Open Systems Foundation, among others.

- *Pilot Projects*—So far, MCC has a contract with **Wright Patterson Air Force Base**. Aerospace, electronics and computer manufacturers, and software corporations have expressed interest in working

Exhibit 1

MCC's Enterprise Integration

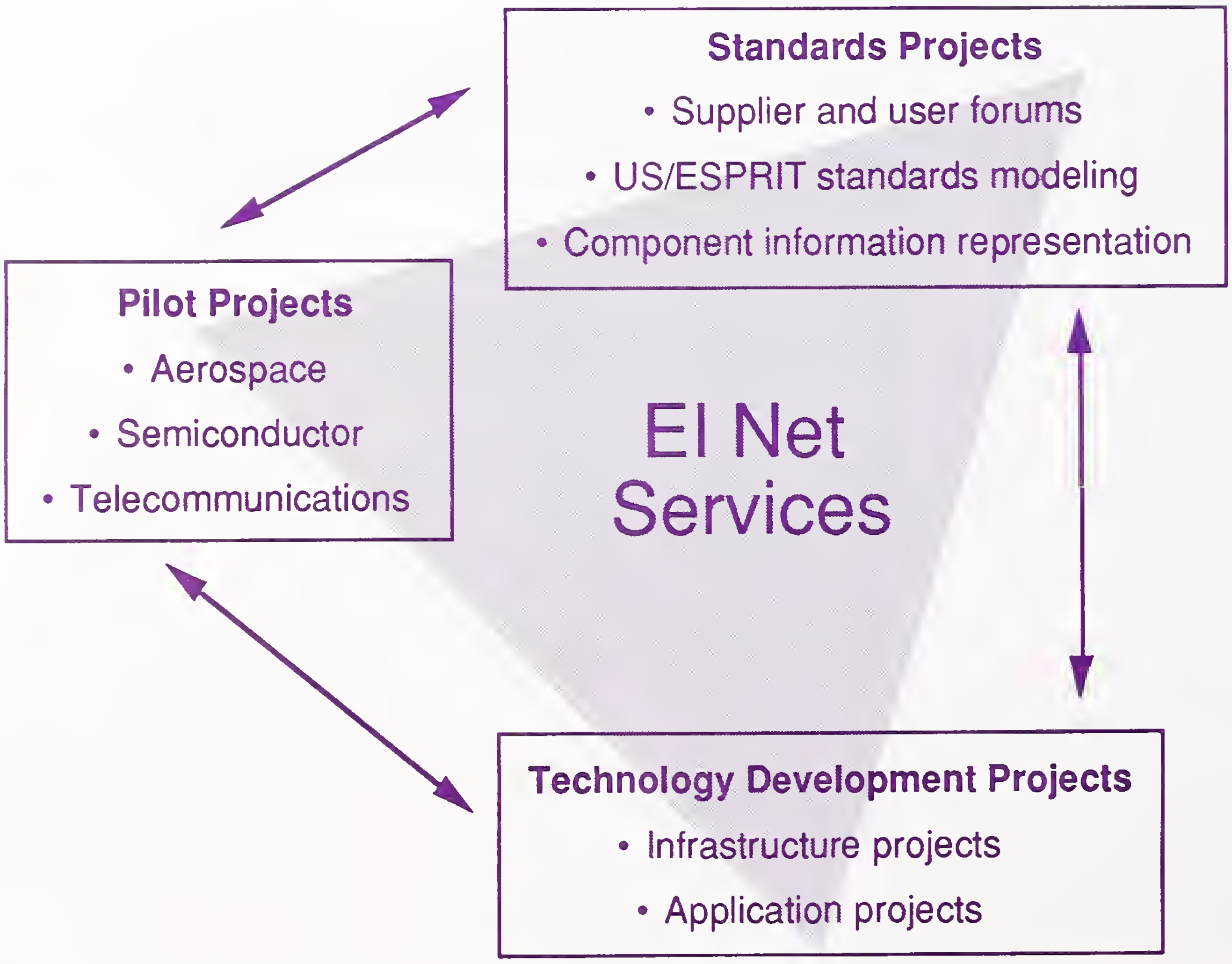
Standards Projects
• Supplier and user forums
• US/ESPRIT standards modeling
• Component information representation
Pilot Projects
• Aerospace
• Semiconductor
• Telecommunications
EI Net Services
Technology Development Projects
• Infrastructure projects
• Application projects

Exhibit 2

MCC's Enterprise Integration Network/Program Fees

Company Annual Sales	Non-Member Fee	Member Fee
Greater than $500 million/year	$60,000	$35,000
Between $50 million and $500 million	$30,000	$25,000
Less than $50 million/year	$10,000	$10,000

Source: INPUT

with MCC, according to Mr. Wilson.

Prices for involvement in and use of the network are shown in Exhibit 2. First, the user company must join the Enterprise Integration project. For companies not already members of the MCC consortium, this participation fee is based on company revenues, as shown in the exhibit.

The user company will then pay the network provider with which MCC has contracted for the EI Network—UUNet. The fee structure, shown in Exhibit 3, is for one year and entitles the user to unlimited use of the network.

MCC intends to use this price schedule to launch the EI Net service. Then, in one or two years, it wants to convert to a pay-per-service schedule in which users pay fees based on volume and type of value-added service.

MCC has no user-site software for sale yet, but intends to make this software available in time. This software would be free to participants of the program. Included with the software will be documentation and telephone hotline support.

In addition to the funding from corporate sponsors, MCC is receiving $2.63 million from Air Force-sponsored contracts to support the Enterprise Integration project.

MCC has received a $1.33 million contract from the Waltham, MA-based software company, **SofTech, Inc.** The Air Force gave SofTech a $27.4 million, five-year contract to develop interorganizational systems for weapons vendors. SofTech then subcontracted MCC to develop enterprise integration guidelines, needs requirements, and a reference taxonomy (a data dictionary that describes parts, components, and subassemblies that manufacturers and their suppliers would jointly/concurrently manufacture).

Another Air Force contractor, **Lawrence Associates, Inc.** (Dayton, OH), also subcontracted with MCC for $1.3 million. This contract is for building a consensus process for the Enterprise Integration process, supporting a "Supplier's Working Group," investigating potential for international cooperation, and "transitioning an EI reference taxonomy to provide the rules, or formalisms, which serve as building blocks for creating EDI architectures for industry-specific applications."

Exhibit 3

UUNet Fees for MCC Participants

Speed	Unlimited Use Per-Year Fee
56 Kbit/sec	$10,000
T1	$25,000

Source: INPUT

Continued on page 4

Thinktank . . from page 3

MCC's purpose for the Enterprise Integration project is to promote cooperation among U.S. manufacturing companies to compete in worldwide markets.

As Mr. Wilson puts it, "no commercial network yet can really have an impact on the way America does business. We have to cooperate more or else we are dead."

MCC president and chief executive officer **Craig Fields** said, "By providing the impetus to connect Air Force suppliers and the opportunity to build a consensus for a national Enterprise Integration structure, I believe the Air Force is taking a critical step toward developing the important underpinnings for a national EI infrastructure."

Analysis. The EI program is running the risk of reinventing the wheel. EDI and electronic enterprise integration have been going on since the 1960s. Depending on how you define them, there are already 80-plus network service providers in the U.S. alone, and another 60 EDI software companies. Graphics file transfer is already a reality, particularly in the automotive and apparel industries (**GE Information Services** and **MicroDynamics** are two prominent companies in this area). National and international EDI standards bodies are now consolidated around X12 and EDIFACT after a long decade of sorting through issues. The federal government has many enterprise integration programs under way—there are 170 EDI projects in the **Department of Defense** alone. The Executive Branch's **Office of Management and Budget** has sanctioned the use of X12 throughout all government offices and departments, and through the DoD, **Treasury**, **Customs,** and the **Department of Commerce**, the EDI-fication of the government is as well under way as it can be.

The problem is not that nobody has thought of technical solutions to enterprise integration problems, as MCC thinks. The problem is getting everyone—standards committees, industry representatives, trading partners, functional groups within companies, government regulators (particularly Customs, the **Internal Revenue Service**, the **Environmental Protection Agency**, and the DoD) and, last but not least, vendors of IS systems—to agree on what to do and then do it. The problem is political, and there have been and will be winners and losers in the evolution from paper to electronics.

MCC's offer is just one more voice in the already worldwide, multi-constituency, increasingly populous discourse on enterprise integration. MCC's is not *the* solution; it is just one more competing alternative.

Sources:

Alexander Cavalli, Chief Architect, Enterprise Integration Division, MCC, 512-338-3581.

Bob Wilson, Marketing Coordinator, MCC, 512-338-3722.

Cynthia Williams, Marketing Communications Assistant, MCC, 512-338-3512. ▮

Profiles

UUNet, Inc.

UUNet Technologies, Inc. (pronounced "you you net") is an international networking corporation providing domestic and international communications and information services to over 2,300 customers worldwide. UUNet, headquartered in Falls Church, VA, maintains nearly 400 connecting points to its backbone packet switched network. UUNet's electronic mail and news services provide a dedicated, accessible, and reliable facility for international electronic mail and electronic news, including mail access to the Internet (the academic research network that was formerly ArpaNet, the military's research network).

UUNet was selected by MCC to be the carrier for MCC's Enterprise Integration Network (EINet), which MCC hopes will become a national enterprise integration information network. MCC will utilize UUNet's AlterNet public TCP/IP network service as the backbone of the EINet system. AlterNet is a contract wide-area network service, providing a variety of connection options and a high level of access to other networks.

SofTech, Inc.

SofTech, Inc. (Waltham, MA) designs and develops custom software and provides systems engineering and integration services. Its 1991 revenues ($54 million) were split between commercial business (one-third) and government, primarily defense (two-thirds).

In April 1991, the Air Force awarded SofTech the largest contract in SofTech's history, the Enterprise Integration Program (EIP) for $27.4 million, with an overall potential value of $57.9 million over five years. SofTech will be the prime contractor for this Air Force program, which seeks to strengthen the defense industrial base by accelerating the adoption of computer-integrated manufacturing in American industry using open systems information technology. ■

Grassroots Business Networks Hold EDI Potential

Many private, nonprofit, and state-sponsored initiatives have sprung up throughout the U.S. to help local and regional businesses pool their resources. These affiliations are usually focused on a specific industry, such as metalworking, and are based on European models where networks of midsized businesses have successfully increased their exports by banding together. Japanese keiretsu concepts have also fueled the desire to set these networks up.

These already formed business networks—transacting business together, sharing information, and sharing telecommunication facilities in some cases—are EDI networks waiting to happen.

- *Arkansas*—**The Metalworking Connection** has 55 members and is pooling resources in apprenticeship, group insurance, and marketing.
- *Florida*—**Technology Coast Manufacturing and Engineering Network** is a group of 29 defense contractors sharing marketing, production, purchasing, and work.
- *Illinois*—**The J. Adams Metalworking Consortium** consists of 30 metalworking companies jointly involved in marketing, purchasing, sharing equipment, and technology and training.
- *Massachusetts*—**The Needle Trades Action Project** has 40 apparel and sewn products manufacturers working together in market development, technology transfer, and training. **The Machine Action Project** consists of 150 metalworking companies sharing in technology diffusion, apprenticeship, and training.
- *Michigan*—**The Manufacturing Modernization Service** (MMS) is a state government-sponsored program aimed at developing networks. It first mapped out business linkages and regional concentrations of firms. Then it began encouraging businesses to set up networks to perform certain activities collectively, such as purchasing, research and development, and production. Under the state's **Manufacturing Alliances Program**, the state has made available $1.5 million in challenge grants of up to $20,000 per network initiative. Larger grants of $50,000 to $70,000 have been given to trade associations for implementing industrywide strategies. The Michigan **Manufacturing Technology Association** is a group of 70 machine tool makers sharing in research and development. The **Independent Parts Suppliers** are 21 auto parts makers jointly enhancing their marketing, quality standards, and training efforts.

- *Minnesota*—The **Tri-State Manufacturing Association** is 38 general manufacturing companies working in enterprise development and subcontracting.
- *Montana*—**Montana United** consists of seven defense contractors involved in shared production and technology transfer.
- *New Jersey*—**The Lab-Management Committee for Apparel Industry** is 100 apparel manufacturers involved in technology transfer and training. The **Patterson Textile Center** is a group of 28 print and dye makers that are sharing in

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technology development and waste minimization.

- *New York*—**The Greater Syracuse Metalwork Industry** is 40 metalworking companies involved in marketing and production.

- *North Carolina*—**The NCU Industrial Extension Service** is 78 diversified industrial companies working together to improve buyer-supplier contracting. **The ECU Center for Applied Technology** comprises 17 companies in the boat building industry that are jointly developing materials technology.

- *Ohio*—**The Heat Treaters Network** is 20 forges jointly developing process technologies, development, and diffusion. **The Southern Ohio Wood Industry Consortium** consists of 17 wood products companies that are helping each other in financial consulting, market research, marketing, product innovation, technology transfer, and training. The **Worker Owned Network** is 30 furniture makers who share in production activities.

- *Pennsylvania*—The state's **Manufacturing Innovation**

Network Contacts

Name	Affiliation	Telephone No.
Jim Benham	Arkansas Science and Technology Authority	501-324-9006
Matt Coffey	National Tooling and Machining Association	301-248-6200
Joseph Cortright	Joint Legislative Committee on Trade and Economic Development	503-378-8811
Bob Coy	Office of Technology Development	717-787-4147
Bob Forrant	Machine Action Project	413-781-6900
Robert Friedman/ Doug Ross	Corporation for Enterprise Development	202-408-9788
C. Richard Hatch	New Jersey Institute of Technology	201-568-4993
Anne Heald	The German Marshall Fund	202-745-3950
June Holley/ Roger Wilkens	Worker Owned Network	614-592-3854
Robert Kidd	Maine Science and Technology Commission	207-289-3703
Jacques Koppel	Minnesota Technology, Inc.	612-338-6666
Tom Lehman	William C. Norris Institute	612-297-6900
Stuart Rosenfeld	Southern Technology Council	919-941-5145
Jack Russell	Industrial Technology Institute	313-769-4107
Charles Sabel	Massachusetts Institute of Technology	617-253-3445
Lester M. Salamon/ Bob Siedel	Institute for Policy Studies	301-338-7174
Paul Sommers/ David Harrison	Northwest Policy Center	206-543-7900
Hank Spicer	Louisiana Power and Light Company	504-363-8870
Trent Williams	Louisiana Partnership for Technology and Innovation	504-922-9189

Networks Program, Industrial Resource Centers, and **Ben Franklin Partnership** is helping several industries set up collective technological, marketing, and training activities. The **Atlantic Apparel Contractors Inc.** consists of 250 apparel makers sharing in accounting supervision, process technology, and training. The **Delaware Valley Industrial Resource Center** is a group of 14 **Boeing** suppliers sharing results of their quality programs. The **MAIN Plastics Initiative** consists of 80 plastics manufacturers that are involved in joint equipment purchasing, technology development, and training. The **National Tooling and Machining Association** is 100 machine tool makers involved in joint training practices. The **PA Foundrymen's Association** consists of 50 foundries helping each other in niche marketing.

- *Washington*—The **WoodNet** group is 50 wood products makers helping each other in design, marketing, and production.

Because industrial agglomerations often do not respect state boundaries, multistate efforts have also sprung up:

- **The Southern Industrial Competitiveness Project** for Southern states.
- **The Joyce Foundation** for Michigan, Indiana, Ohio, and Illinois.
- **The Pacific Northwest Economic Region**—Washington, Oregon, Idaho, Montana, and Alaska, together with the provinces of British Columbia and Alberta and under the guidance of the Northwest Policy Center, have committed to convening sector-specific forums across jurisdictional lines.
- **The Global Technology and Markets Observatories**—Michigan, Maine, West Virginia, and Illinois share sectorial intelligence across state boundaries. ■

NCR and Teradata Align Products

EasyLink EDI Services to Fit In Later

NCR, the new subsidiary of **AT&T**, purchased Teradata, a $258 million data base machine company, in a stock-for-stock exchange valued at $520 million.

Teradata, founded in the early 1980s, builds a special type of computer that meets the need for enormous data storage. Its DBC/1012 computer is an expandable array of Intel microprocessors, each one controlling a disc drive. Through a proprietary and patented operating system, the machine will take SQL commands and deliver responses to users in nanoseconds. The result is a machine with terabyte (billion byte) storage capacity. Banks were Teradata's first customers. Today, it has over 100 customers. **Sybase** and **Oracle** data base software are the typical DBMS packages that run on the Teradata machine.

A couple of years ago, NCR embarked upon its own strategy of building multiprocessor computers. Many of its clients, mainly in the banking and retail sectors, had huge transaction processing requirements. NCR hired Teradata's chief scientist, **Phillip Neches**, and made him its chief scientist. NCR's 3600 machine was the result. Now, the two companies are one and Mr. Neches is the guru.

Now that it owns Teradata, NCR is merging the Teradata and NCR product directions. NCR has established a migration path for existing Teradata users. The plan calls for the addition of general-purpose application processors to the DBC/1012 Model 4. Each application processor is composed of two to eight tightly coupled 50MHz Intel i486 processors. The base operating system is UNIX V.4 MP. The NCR 3600 and the DBC/1012 Model 4 are NCR's high-end parallel processing computers. The next generation system will be the NCR 3700, a

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massively parallel computer with more than 1,000 processors.

All machines use the Sybase and Oracle data base management system software.

NCR's customer targets are retail, transportation, telephone/telecommunications, finance/insurance/health care, and retail banking providers. "Anything dealing with the 250 million Americans," said **Bill Eisenman**, NCR's Vice President, Large Computer Products Division.

NCR defines its market for multiprocessor computers in terms of hardware. It focuses its marketing strategy on three platform characteristics:

- Decision Support Servers—Information system environments where users make strategic and tactical decisions with detailed records, massive information retrieval and analysis, data modeling, and analysis with very large data bases
- On-line Transaction Processing Servers—Response time less than 2 seconds, high transaction volumes (greater than 50 transactions per second hitting the host), high availability and reliability
- Large Application Servers—General-purpose applications, multiple/merchant relational data base management systems, batch processing, and networking

Implications for EDI

NCR's acquisition of data base machine maker Teradata has implications for EDI. Note that one of the world's largest EDI users, **Kmart**, is also a Teradata user. In one integrated operations control information system, Kmart is electronically linking (1) the monitoring of product movement down to the SKU level, (2) EDI purchasing for merchandise replenishment, and (3) maintenance of price lookup data bases for electronic cash registers. Each functional area cybernetically feeds and responds to the others. The Teradata data base and the EDI translator/gateway are two critical "servers" to Kmart's overall retail IS operation.

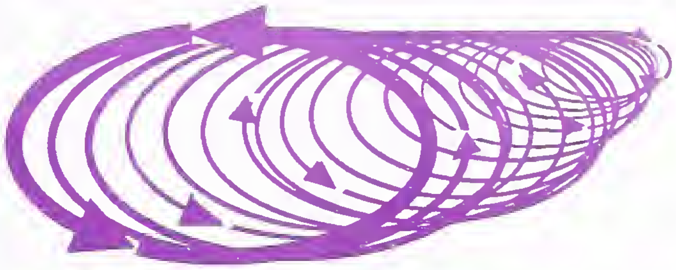
According to Mr. Eisenman, there are efforts now under way within AT&T/NCR to examine how EDI network services, offered through AT&T's EasyLink service, can be packaged with the multiprocessor hardware in a turnkey offering.

EDI and multiprocessor computers are complementary in two ways; NCR/AT&T is well poised to capitalize:

- Both are transaction oriented, especially for transactions between buyers and sellers (the EDI and POS contexts) or between owners of assets (the ATM, EFT, and bank context). EDI enables these transactions to take place electronically and therefore automatically feed applications in other areas. Multiprocessor computers can process, store, and later retrieve information to perform further computationally intensive analysis of the enormous number of transaction records. Such a repository of data with such a processing capacity is the basis for statistical analysis on product movement, price elasticity, market share by store site/brand, and linkages to demographic data on consumers.
- Both EDI and multiprocessor computers must operate within and give rise to an interconnected system of processors and computers where data is generated in one application and passed to others electronically. This network of processors performs diverse operations in parallel. For example, the accounts-payable system may simultaneously send payment advices to the invoicing company and to its bank. A single message triggers a variety of processing functions in different locations. EDI, as the translation capacity that enables diverse systems to communicate, and multiprocessor machines, as a microcosm of large interconnected networks, give rise to *de facto* parallel programming. The combination is the model for parallel programming in general: specific processors are assigned specific tasks to perform repeatedly, and each processor responds only to message types it can do something with.

Because it bridges applications and systems, EDI gives rise to huge volumes of electronic data. This data needs to be "housed" somewhere; it also needs to be processable as a whole (that is, the user wants to slice and dice great amounts of transaction data in order to detect trends). This is why the multiprocessor data base/computer and EDI are such an excellent match. ■

Transaction Analysis and EDI: The New Business Environment



New Applications

Below are some examples of merging EDI with transaction analysis services and systems.

- **Sterling Software**'s MarketQuest—Transaction data bases and EDI already have appeared with Sterling Software's MarketQuest service. Purchase order and invoice traffic over the network is compiled into reports that indicate product movement and market share. Manufacturers and distributors use this to make marketing and pricing adjustments. The electrical equipment and animal health products industries are currently participating. Participation is not mandatory and is possible only with the express consent of network users.

> "For one thing, massively parallel computing does not exhibit the diseconomy of scale that caused decentralization in the first place."

- **Levi Strauss & Co.**—Levi monitors its EDI traffic and regularly analyzes its network costs. It uses three value-added networks (in addition to conducting direct transmissions with some of its largest retail customers). Levi's in-house built communications software tracks EDI transmissions and compares and contrasts VAN expenses against transmission volumes and times of day. The software enables Levi, working with the trading partner, to rechannel its communications to obtain best pricing. Also, Levi uses the system to determine quick response effectiveness and to track the time between receipt of an order and shipment.

- The Census of Business—The **Bureau of the Census** is developing a Statistical Government Reporting X12 transaction set (number 152) that would allow establishments to report statistical government information using EDI. The Bureau regularly polls all business establishments (in the several SIC categories) and asks questions about company sales, employment, the number of locations, percent ownership by foreign and domestic investors, merchandise lines by SIC code, expenditures on production inputs by type, etc. With an EDI transaction set, the department will send the questionnaire over an E-mail network, and the company will send it back filled out. The Bureau will be able to process it electronically.

Further in the future, however, this business data may be able to be culled from other EDI transactions. Just as Sterling's MarketQuest prepares sales data for specific industry sectors, the Census of Manufacturer data (particularly sales and expenditure data) could be gathered by capturing EDI traffic flowing through networks.

New Tools

To analyze the huge volumes of transaction data that are accumulating and will accumulate even more in the future, the following technologies are required:

- *Neural Computing*—Neural computing is fundamentally different from today's **Von Neumann** computing. There is no single equation, rule, or program that controls the whole system. Instead, it has many distributed, interacting parts, with little or no central control function. Each part is governed by its own rules. Each of these rules may

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participate in influencing an outcome, and each may influence the actions of other parts. The resulting multiprocessor structure is highly adaptive to its surroundings.* EDI, as a key technology for coordinating people, processes, and materiel within a community of organizations, is highly amenable to this kind of distributed programming.

- *Statistics and Data Analysis Techniques*—Data base analysis will be more important in the future as very small pieces of data will be able to be analyzed and compared with other very small pieces of data (for example, retail point-of-sale data). The tools are now available that allow more data to be captured and transmitted electronically. This creates a need for software and analysis techniques to understand this myriad data. The techniques and theoretical principles must be developed before the software can be developed. Model building, statistics, and a special kind of statistics—exploratory data analysis—are areas that will be mined to better utilize the enormous amounts of data that are accumulating.

Parallel Processing and Networks Go Hand in Hand

W. Daniel Hillis, Chief Scientist at **Thinking Machines Corporation**, the Boston-based multiprocessor computer maker, says that parallel processing and networked workstations are the necessary complement in the future.

In the most recent (Winter 1992) issue of *Daedalus*, Hillis says:

"Most experts assume that the trend toward decentralization will continue, and that a larger and larger portion of the computing power will end up on the desktop. I believe they are wrong.

"For one thing, massively parallel computing does not exhibit the diseconomy of scale that caused decentralization in the first place. With a massively parallel computer performing a calculation, a large-scale computer can actually have lower cost per calculation than a number of distributed individual computers. This reverses the economic impetus for decentralization.

"Also, the workstation on the desk makes the centralization of computation and data storage more practical since it provides a user-friendly interface into the central computer.

"In the future, I believe most desktop workstations will specialize in that portion of the computation directly associated with user interface, such as graphics and audio processing, while most computations and data storage will be handled centrally on parallel machines.

"In this future, the workstation becomes the user's window into the network. Since the time required for the computers to communicate is imperceptible to humans, the interaction between the workstation and the parallel machine will be invisible. As far as the user is concerned, the machine on the desktop will behave as if it has the power and the data of the central parallel machine. For better or worse, this will make us even more interdependent than we are today." ■

Sears and INFONET Link EDI Networks

INFONET and Sears Communications Company have interconnected their respective EDI networks.

The linkage is more than just a VAN interconnect. For messages originated in one network and received in another, each network will send receipt acknowledgment messages to confirm (or not) for senders.

INFONET, which has similar interconnect alliances with eight other messaging networks in the U.S. and around the world, will gain a major EDI player that has international trading partners and will need the use of INFONET.

Sears will gain the extra capacity to communicate abroad with INFONET. Sears' network is more than just an EDI network. It supports the information needs of **Coldwell Banker & Company, Allstate Insurance Company**, and **Dean Witter Financial Services Group, Inc.** It also performs some of the message transport for the **Automated Clearinghouse**.

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*This characterization of neural computing is a paraphrase of **John Holland** in *Daedalus*, Winter 1992.

More than 118 countries use INFONET's public data network. ■

News Bits

ACS/Premenos has changed its name to Premenos. The leading midrange EDI translation software maker, the company is now offering an Open Systems E-mail product. It is also opening an office in Europe and claims to have 1,800 installations of its translation software.

In a five-year, $12.5 million agreement, **BT North America** will build and manage **J.P. Morgan**'s international data network through its Global Network Services. The network will encompass 26 sites in 14 countries.

BT North America is providing radio access to its packet switched network through **ARDIS**, the nationwide radio data network that is a joint venture between **IBM** and **Motorola**. Later this year, BT will offer cellular access to its network. BT aims to provide wireless access services to the electronic transaction services, retail, and credit card industries.

Kleinschmidt Inc. (Deerfield, IL) now supports the UNIX-to-UNIX Copy asynchronous data communications protocol for users dialing into its network. Support of UUCP permits firms on UNIX platforms to participate in EDI without having to acquire additional communications hardware and/or software.

Michael G. Eckstein has replaced **Sri Sridharan** as president and CEO of **EDI Able, Inc.** (formerly FoodCom). Mr. Eckstein was the president and chief operating officer of **Keystone Technologies**, the wholly owned technology subsidiary of **Pennsylvania Blue Shield**, a client of EDI Able's. Mr. Sridharan resigned and is pursuing EDI opportunities outside the U.S.

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Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

April 13-16, Hyatt Regency Crystal City, Washington, D.C., CALS & EDI: Joint Initiatives through Electronic Commerce, Government Computer News/Electronic Commerce Executive Forum, 301-445-4400.

May 11-13, Sheraton Seattle Hotel and Towers, EDI '92, Seattle, WA, DISA, (703) 548-7005.

May 17-20, The Palmer House, Chicago, IL, 5th Annual Corporate EFT/Financial EDI Conference, University of North Carolina at Chapel Hill, 312-726-7500.

May 17-20, The Registry Resort, Naples, FL, Transportation Technology Exhibition, American Trucking Associations/ Management Systems Council, 703-838-1721.

June 23-24, Mayflower Hotel, Washington, D.C., 11th Annual International Trade and Computerization Conference, NCITD, 212-925-1400.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530; fax: 38-64-214-458).

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

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INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services.

Formed as a privately held corporation in 1974, INPUT's clients include more than 100 of the world's largest and most technically advanced companies.

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10 ... X.400 Software for EDI Arrives from Isocor

How Lotus Can Start EDI's Second Wave

Has Complete Suite of Development Tools for Workflow-Enabled Applications

Lotus Development Corporation may blindside the EDI software and services industry. Until now, EDI software and network service providers have been selling the concept of EDI with a "putsch-from-the-outside" strategy. They approached users—in whatever industry—with a generic interface (translation software and network services) that bridged one application to another.

But why, given the elegance and technical simplicity of the EDI concept, has this approach been only mildly successful? Today's annual user expenditures in the U.S. for EDI software and services is only about $230 million (not counting any hardware purchases).

The main inhibitor to the proliferation of EDI, according to INPUT user surveys, is user difficulty in integrating EDI with internal applications (for example, order entry with shipping and accounts receivable).

Given this reason, perhaps the traditional way of selling EDI—and seeding trading communities to do EDI—has been wrong.

Perhaps (and this is only speculation) the best approach to selling EDI is working from the internal application *out*, not from the connecting bridge *in*? This is the position—the very strong position—into which Lotus has put itself.

Lotus sells the most versatile, popular, and truly end-user programmable application-development software for the PC platform: the spreadsheet. Spreadsheets can be programmed into full-fledged, standalone software applications such as accounting, inventory control, sales order entry, etc.

Continued on next page

Lotus *. . . from page 1*

Lotus sells a suite of software tools to third-party developers to encourage them to make applications based on Lotus spreadsheet software. Any functional application that might be interfacable with EDI software could be built on a spreadsheet (although it wouldn't be a high-volume, high-performance system).

Wal-Mart, in conjunction with **TSI/Foretell,** has developed an EDI system with suppliers that uses a Lotus spreadsheet as the application at the supplier site. Wal-Mart knows that if the data can be processed in an application—even by an unsophisticated spreadsheet-based application—the overall efficiency and effectiveness of its communications will improve.

There are 14 million users of Lotus' first spreadsheet product, Lotus 1-2-3.

Whereas its spreadsheet products are "everyperson's" number crunchers, Lotus is positioning its Notes "groupware" product as everybody's text, messaging and workflow management software. Although it is not nearly as popular as 1-2-3 or Symphony, Notes has 115,000 users.

With Notes, Lotus has another very flexible, end-user application development tool for messaging and text processing. It is software that has the potential to work well in an EDI environment. In fact, **Price Waterhouse** developed an EDI-like system in the mortgage banking arena using Lotus Notes (see September 1990 *EDI Reporter*).

Lotus has further bolstered its standing in the messaging arena by acquiring cc:Mail (last year) and by using **Action Technologies**' workflow management software (just announced). cc:Mail is the leading LAN-based E-mail software product, with 1.5 million users and 35% of the LAN E-mail unit installations.

Action Technologies, Inc. (ATI) is the originator of the Message Handling Service (MHS) interchange standard for LAN E-mail systems. Its latest product, Workflow Management System, is a generic architecture that applies to any software application/environment that supports the work of several persons. ATI is licensing Workflow Management to several software vendors.

By integrating Notes into the cc:Mail user base and by adding a workflow management component to it, Lotus may have an end-user application development tool with widespread appeal and interconnectability.

Combining its spreadsheet and Notes/messaging products would put Lotus in an incredibly unassailable position among the vast majority of computer applications: those that run on PCs.

Eighty percent of units shipped of EDI translation software sold today is for microcomputers.

With PC-based tools giving end users the ability to build structured messaging and data processing applications, the possibility for integrating companies electronically—the goal of EDI—becomes much more certain.

Instead of having "EDI" as a "thing" out there that a user organization must adopt, Lotus is giving users tools with which they will inevitably—and on their own terms—come to see the need for EDI. As opposed to today's "putsch" approach (impose EDI from outside the walls of the organization), Lotus has adopted the "Trojan horse" strategy with EDI (develop EDI from within the walls of the organization).

Joe Harris, Information Technology Director, **NBC Television,** is trying to foster EDI in the media industry in exactly this way. "Get people to network with others in their office first. Get them comfortable exchanging messages and files. Then let them, on their own, see the need for communicating to the outside," says Mr. Harris. "This way they will develop standards that really work."

Sources:

Joe Harris, Information Technology Director, NBC Television, 212-664-2645.

Thomas White, President, Action Technologies, Inc., 510-521-6190.

John Landry, Senior Vice President, Software Development and Chief Technology Officer, Lotus Development Corporation, 617-577-8500. ■

Focus: Electronic Commerce in the Media Industry

EDI and Electronic Commerce Play Major Roles in Media Upheaval

A tectonic shift is occurring in the media industry.

- Telephone companies and cable television operators are competitors and/or partners.

- The formerly discrete segments within the print publishing value chain—author, publisher, printer, distributor/agent, retail outlet, reader—are rapidly blending.

- Media conglomerates and alliances are making for huge vertically integrated (with scale economies) and horizontally extended (with scope economies) companies that harvest profits from intellectual property royalties, distribution services, and hardware sales. Witness Philip's investment in Blockbuster, Sony's and Matsushita's purchase of Hollywood film studios, and the product lines of Ziff, Time Warner, Disney, McGraw-Hill, Knight-Ridder, and Dun & Bradstreet (to name a few) that span the television, film, book/magazine/newspaper publishing, software publishing, and electronic information services media.

- Business information formerly conveyed by third-party media companies (such as newspaper publishers, directory and report publishers, etc.) is now generated and conveyed by networked, intercorporate information systems that facilitate the activity of the businesses themselves. Examples of this are the sharing of transactional data among companies and on-line data base services (particularly in the financial arena) that link company management-information and messaging systems with larger transcorporate communication networks and markets.

Although consumer buying behavior ultimately determines the viability of the final products of media, it is electronic digital technology that is causing the "earthquake."

To examine the EDI and electronic commerce possibilities in this highly dynamic environment, INPUT is producing a new market study, *Electronic Commerce in the Media Industry.*

Although the media trading community consists of many players, it has two centers of gravity: around the printed/text world and around the video/film world, as shown in Exhibits 1 and 2. Below are some examples of the kinds of applications that are occurring now in the media industry. The report contains a comprehensive analysis of EDI and electronic commerce in media.

Video Store EDI: The Window is Open, but Will Viewer-Controlled TV Close It?

EDI is being used in the distribution of movie videocassettes—and it shows lots of promise. EDI enables retail outlets to perform just-in-time ordering, a mandatory strategic requirement because of the time-critical nature of releasing movies on video (witness **Disney**'s ironclad market sell period for its Fantasia video offering). But in the long run—three to seven years—will EDI in video distribution be a moot point if movies are available over high capacity, pay-per-view, cable television networks?

It is too early to tell, but the groundwork is being performed in two areas at this time:

- EDI relationships are being established between retail video stores and distributors, and distributors and movie studios. Movie studios are performing EDI further "upstream" with videocassette duplication service vendors.

- At the same time, cable television operators and telephone companies are beginning to offer pay-per-view movies delivered via telephone/cable TV networks to the household.

Video Store Distribution Channels

ZBS Industries (Cleveland, OH) is a $60-$80 million privately held video distributor. It buys videos from movie studios and sells them to retail outlets. Its customers are typically neighborhood, mom-and-pop video rental stores as well as grocery, drug, and convenience stores. A number of its customers are

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EDI Media. . . *from page 3*

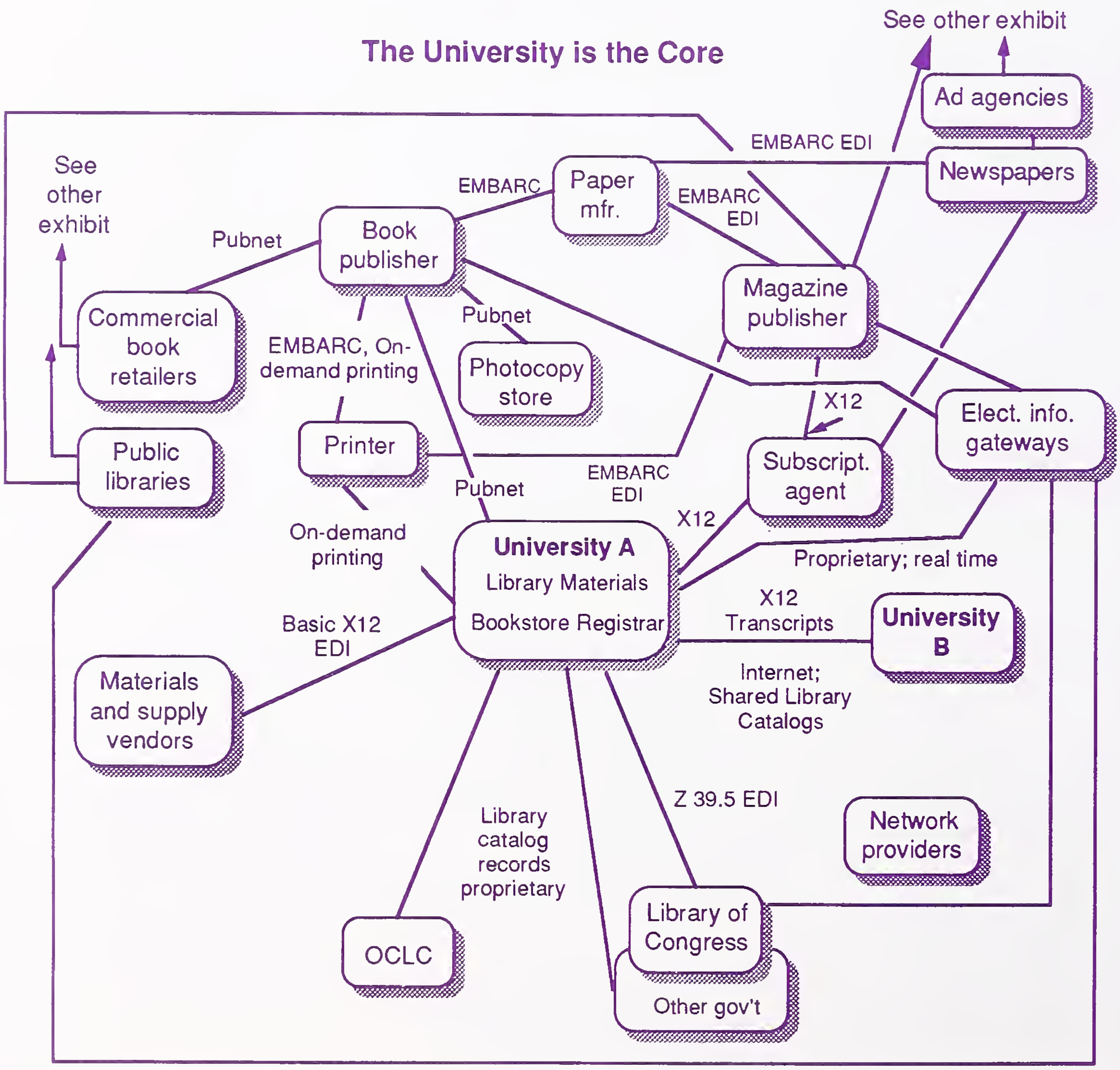
grocery and drugstore chains that rent and sell videotape movies.

With a number of these outlets, ZBS has EDI links. Using Uniform Communication Standard (UCS) and proprietary data formats, stores are sending electronic purchase orders to ZBS. ZBS is invoicing in some cases and sending ship notices. In fact, ZBS has developed a UCS-DEX (direct store delivery) application for delivering videos to stores.

Carla Edmister, ZBS' EDI manager, is working on a plan to help small video store owners—not just the big chains, supermarkets and drugstores—implement EDI. She is working with a number of turnkey software houses to provide solutions, and with the **Uniform Communication Council** (UCC). Ms. Edmister runs her own EDI system on St. Paul Software using **Sterling Software**'s ORDERNET network. (She was originally using **Control Data** Redi*Net, which Sterling acquired last year.)

Exhibit 1

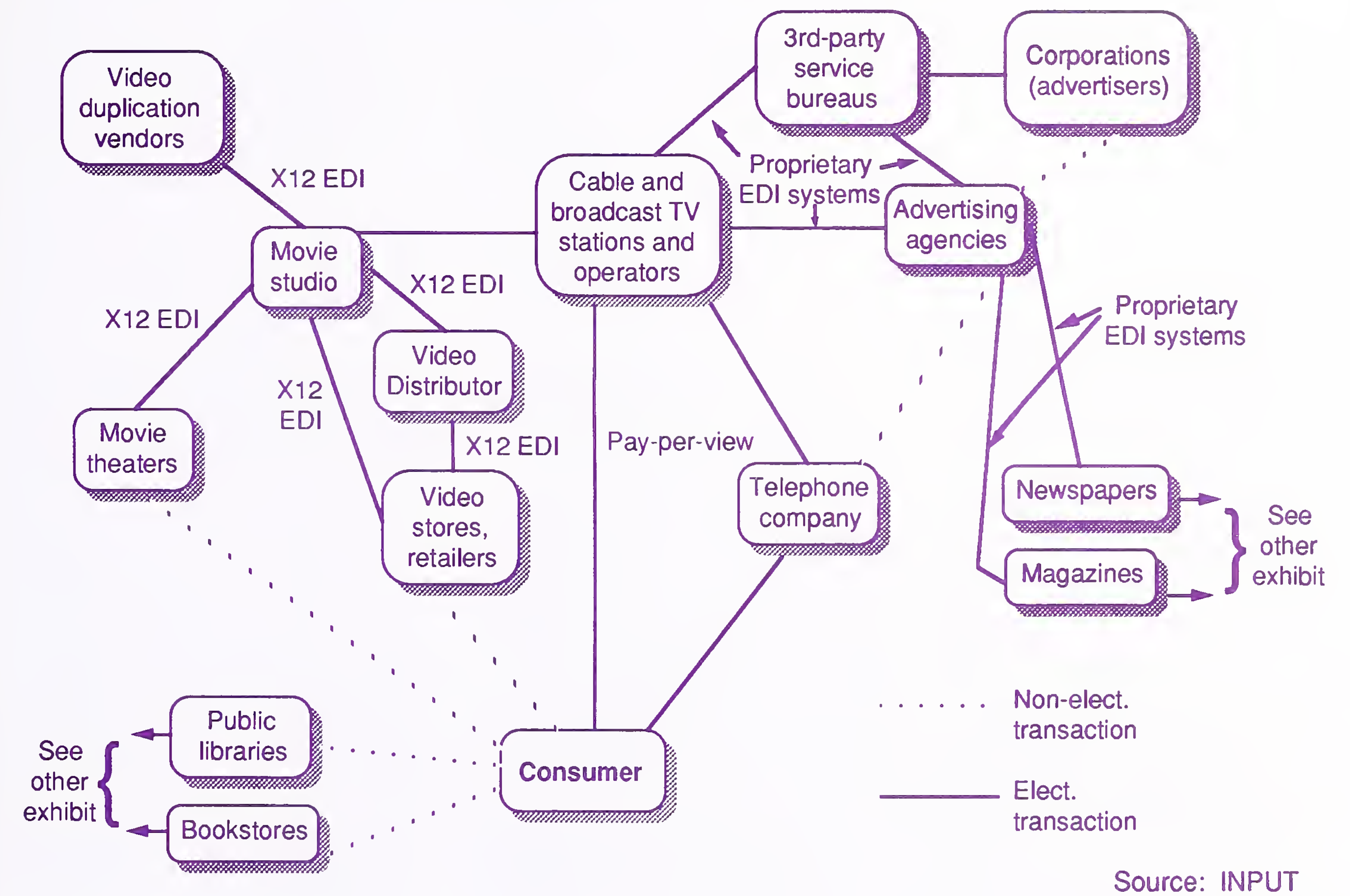
Current Electronic Commerce in Print/Text Media Trading Community



Source: INPUT

Exhibit 2

Electronic Commerce in Video/Film Media



Source: INPUT

ZBS makes deliveries to most of its clients using UPS courier services, except for large accounts for which it contracts truckload and less-than-truckload services. For the courier-delivered shipments, ZBS will send an electronic advance ship notice to the store's network mailbox. The store picks this up prior to the arrival of the delivery and loads the information into its receiving system. When the shipment arrives, store clerks scan the shipment and match it to the ship notice. With a perfect match, the store's accounts payable system is triggered to prepare payment. If there is a discrepancy between the ship notice and what was actually received, an electronic rejection notice is prepared and sent back to ZBS.

Ms. Edmister doesn't see rapid adoption of EDI by most video outlets anytime soon. It is too costly, she says. But prices of hardware are coming down. In three years, she expects the economics of doing EDI at small "mom and pop" stores to be feasible.

One attractive advantage of EDI (besides EDI's usual error reduction, labor reduction, etc.) is the turnaround time in ordering videotapes. Studios announce dates when movies will be available in video format. Stores want to have these new releases in stock the very day they become available. Also, studios announce an ordering deadline, typically a few weeks before the street availability date. The stores have to place their orders before this date in order to have videos on time for the street release date. EDI gives them the ability to wait to the last minute—which allows

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EDI Media. . . *from page 5*

store owners to better assess market interest and cost, make promotions and deal with other factors—before placing the order and making the ordering window/deadline.

ZBS has been doing EDI for two years now.

It is not doing EDI with movie studios, its supplier. Ms. Edmister is working in this direction, however. Many of the larger chains (such as **Blockbuster**, and some of the sell-through—non-rental—video outlets such as **Sears** and **Wal-Mart**) buy videos directly from the studios and bypass distributors such as ZBS. Approximately six distributors control most of the video distribution in the U.S.

ZBS is working with a number of software providers to help stores get into EDI. **XEC Corporation** (Akron, OH) and **Automated Solutions** (Richmond, OH) are two of these.

Automated Solutions has developed a turnkey system for video stores. The system, called Video Point-of-Sale System (VPSS), provides customer and rental management, inventory control, accounting, and EDI functions. It runs on a PC (running MS-DOS) and costs $1,295 for a single user site and $1,995 for a multi-user site (all hardware is extra). The VPSS system can be used in any retail environment where videos are rented and/or sold. So far, Automated Solutions has installed its system in an Ohio-based supermarket chain. It is negotiating with other grocery chains.

Many grocery and other stores carrying merchandise in addition to videos will rely on jobbers—"rackers"—to select and stock their video shelves. According to Automated Solutions vice president **Gregg Mathaie**, with the VPSS such stores can eliminate this middleman and recoup the profits that had to be shared (sometimes 35%) with the person. Mr. Mathaie claims that the automated system has produced a 300% increase in profits for the store video business.

Twenty to thirty percent of the total revenues of **Paramount Pictures** derives from video cassette sales. Paramount is using EDI, but not yet with cassette buyers, such as ZBS and other distributors and large mass merchandisers. Although Paramount intends to use EDI to sell its videos to these customers by the end of the year, it is already doing EDI with its main supplier, **Rank**, a videocassette duplication service provider and the only one Paramount uses. Rank functions as Paramount's videocassette factory. It mass duplicates all of Paramount's videocassettes and is responsible for the warehousing and shipment of the cassettes.

Paramount sends Rank X12 purchase orders and sales advices. Rank sends Paramount inventory and fulfillment advices. The companies communicate over the **IBM Information Network**. Paramount runs **Premenos** software running on an AS/400.

Real Time Needed

According to Paramount's Video Business Executive Director, **Winnie Leung**, the company is considering a real-time connection with its video duplicator vendor. Real time is important for a number of reasons.

- To fulfill sales orders, Paramount representatives would like to have up-to-date inventory information from Rank.
- To meet the release dates and time windows related to releasing videos, communicating orders on a few hours' notice is mandatory.
- The faster the order can be delivered to the duplicator, the sooner the videocassette can be made to fulfill the order. The sooner the fulfillment, less inventory is required on hand to meet new orders. Keeping less inventory reduces costs. In the intellectual property business of film production and distribution, where the marginal cost of making one more widget is practically zero, time is literally money. (Here, the time period of importance is the amount of capital necessary to fulfill a customer request.)

Cable TV Distribution Channels

U.S. West, **AT&T**, and **Tele-Communications Inc.** (the latter being the largest cable TV operator in the U.S.) will launch an experimental service in a few months that will allow residential TV viewers to order movies and pay-per-view coverage of events (e.g., sporting events) through their televisions. The experiment will take place in Denver and will involve about 300 households.

According to U.S. West public relations director **Steve Lang**, the experiment is concentrating on testing a market, not a technology. The service will be delivered by hand: U.S. West employees will be physically loading videocassette players in response to specific customer requests. "We are testing the market, not the technology in this pilot," Mr. Lang said.

The movie service will be comparable to the typical video store in both selection (over 1,000 titles will be available) and price. Mr. Lang didn't comment on the exact price of the service, but recognized that videos can be rented in stores for as little as 99 cents.

Tele-Communications will be the service provider that the residential customer deals with; U.S. West will be the delivery network provider (including the origin of the movie video signal); and AT&T will provide customer management services and software.

The joint venture in Denver is not providing video dial tone. Video dial tone is a more advanced concept.

In Southern California (Cerritos), **GTE** has been doing a trial for pay-per-view movies. Also, in New York City, **Time Warner Inc.** launched its Quantum cable television service with 150 channels, including on-screen ordering of movies and events. Quantum's pay-per-view movie service gives the customer 16 separate movie titles to choose from at one time with fixed starting times every half hour. Movies are priced between $1.95 and $4.95. Special events are also offered and priced individually.

Analysis: Cassette or On-line Delivery?

The shakeout that is developing between the video store and the cable TV/telephone operator will inevitably result in some contraction of today's video store business. How much is impossible to predict at this stage. At least two observations can be made concerning the development of the market:

- An analogous shakeout is occurring in the electronic information markets, where CD ROM delivery of some data bases is proving more economical to information users than on-line delivery. The economics are largely determined by the volatility of the information. For real-time stock quotes or commodity prices, real-time delivery service is required. For dated reference material, CD ROM (often updated on a monthly basis) is better.

Perhaps the same economics will apply to the video delivery business, and the video store will be preserved. Real-time events (sporting events, wars, etc.) will find a market in on-line, "pay-per-view" television, while movies—released months after first-run movie-house exhibition—will be distributed in cassette format through retail outlets.

- Studios are indifferent to which way the market goes, videocassette stores or pay-per-view TV. Paramount's Leung sees CATV and stores as just two alternative distribution channels for aftermarket film revenue. The CATV channel may be more profitable because there is no need to mass produce cassettes, so costs are much lower.

Consumers Pick the Channel

The information industry underscores a key point of electronic commerce: consumers drive the business. While technology allows companies to streamline their organizations and trading communities, the ultimate contour of the product-delivery value chain to be streamlined (in this case, CATV or video stores) is determined by the consumer.

Technology is putting production capacity at the fingertips of the consumer in a single interface. But there are numerous alternatives for where this consumer/capacity interface should be maintained.

The shakeout, competitive environment, economics, market identification and sizings, and other issues of the information industry will be available soon in a new report by INPUT, *Electronic Commerce in the Media Industry*.

Sources:

Carla Edmister, EDI Manager, ZBS Industries, 216-461-6275.

Gregg Mathaie, Vice President, Automated Solutions, 216-659-6335.

Winnie Leung, Video Business Executive Director, Paramount, 213-956-4725.

Steve Lang, Public Relations Director, U.S. West, 303-793-6290. ■

Sterling Launches Videotape Education Series

Electronify the marketing and education of prospects who are considering the electronification of their business communications. This is Sterling Software's new approach.

Sterling now has available a series of videotapes that explain several of the key aspects of EDI: its costs and benefits, how to implement it, and others. Its two initial releases are entitled: *EDI: Where's the Payback?* (priced at $225) and *The Technical Side of EDI Implementation* (priced at $355).

These tapes are a further development in Sterling's highly successful—and highly profitable—EDI education services.

EDI software and service vendors have come to realize in the last few years that the EDI sales cycle is extremely long—perhaps more than a year. Such length is costly and risky to the vendor, and economically inhibits the general availability of quality EDI products.

Many vendors have given away a lot of printed material and have spent a lot of time speaking to and educating EDI prospects for free. All of this has amounted to millions of dollars in cost.

Some vendors changed their sales strategies and have repackaged their EDI offering so that the prospect has to pay for up-front education. **Digital Equipment Corporation** is the best example of this change.

Sterling has cleverly made EDI education and training into a successful and very central part of its business. Its EDI Center has trained over 12,000 people in nearly 9,000 organizations since 1985, and it has charged $300 to $1,000 per person per class along the way.

The videotapes are a further extension of Sterling's educational activities that cultivate a market and provide revenue at the same time.

When will such video educational materials be made available over networks? Already there is talk of allowing cable television users to "order" extended advertisements over the cable network (advertisers pay the cable operator to do so). See INPUT's upcoming report, *Electronic Commerce in the Media Industry*. ■

Bookstore EDI: Will Custom Publishing Close the Window on Pubnet? (...not)

About 1,100 college book stores and 500 retail bookstores use an EDI network called Pubnet to purchase books from 36 publishing companies. (The publishing companies are conglomerates that include, under one corporate umbrella, smaller publishing companies, so the total number of individual publisher "imprints" on Pubnet is actually over 80.)

The 350,000 orders that were placed on Pubnet last year (primarily for textbooks) generated a little over $2 million for **GE Information Services**, the value-added network that has an exclusive contract to provide the service. The publishing companies pay most of the bill. With a few exceptions, bookstores get the service free—publishers want to make it as easy as possible for them to order more books.

Bookstores must buy a $250 software package from GEIS that allows them to interface with the Pubnet network. (Revenue from this software is *not* included in the $2 million network revenue quoted above.) The software is integratable, according to Pubnet users, with many commercial bookstore inventory and ordering software packages.

Also, a new on-line data base service allows publishers to disclose availability of book titles. The data base functions similarly to a UPC catalog used in the apparel-retail trading community. Publishers list their books by International Standard Book Number (ISBN). Bookstores call up the data base to check availability. Bookstores are charged to query this service (10 cents if the search is by ISBN, more if the search is by author, title or subject). If the query results in an order, the publisher will subsidize part of the query cost.

The data base is better than an electronic version of *Books in Print*, according to users. It indicates in real time the availability, status, and time-to-delivery of book titles in a publisher's inventory.

Payments and Real Time to be Added

In a recent Pubnet user group meeting, representatives from bookstores and publishers agreed to initiate pilot projects for electronic payments and real-time acknowledgement of purchase orders.

Also, publishers have begun considering selling non-book products over Pubnet—namely, software packages that, in most cases, complement a book (Pubnet focuses on textbook sales, not general interest commercial/retail).

New Member to the Pubnet Community

In a classic example of the organic, evolutionary character of electronic commerce markets, Pubnet is moving to incorporate photocopy-service stores, such as **Kinko's**. These stores receive formal orders from groups—often professors or a department of professors at a university—to make photocopy sets of chapters from a book.

Last year, publishers won a lawsuit that, among other things, stipulated that these photocopy stores must ask for and receive permission from publishers before they make copies of the books. Publishers have inaugurated a program on Pubnet that would allow these stores to use Pubnet to ask for and receive (or be declined) these "permissions," as the industry refers to the process.

Custom Publishing versus Pubnet

McGraw-Hill, Inc. and **R.R. Donnelly & Sons Company** are experimenting with custom, on-demand publishing. It represents an alternative to Pubnet and perhaps the next phase in the transformation of the publishing industry by electronics.

In custom publishing, a college professor selects chapters from textbooks from a McGraw-Hill catalog and specifies any optional materials (a syllabus, articles from other publications, notes, etc.) to be included in a custom book. McGraw-Hill transmits the order to custom-publish one sample or a classroom quantity to Donnelley via modem.

Donnelley's large **Kodak** Ektaprint 1392 LED printer and large-scale page description software called Primis (which uses the Adobe PostScript page description language) manufactures the book(s), usually within 3 to 10 minutes.

Donnelley then ships the custom book(s) to the university. Currently, Donnelly has only one custom publishing printing site—Harrisonburg, PA—which serves all custom publishing customers throughout the country. How the market develops for custom books and how the price/performance of printing devices changes will determine if Donnelley opens up other sites.

"Ultimately, we might see printing at the point of use, but in the near future our goal is to furnish publishers with significantly enhanced capabilities to provide their end-users with printed products, when and where they need them," says **Mark Fleming**, R.R. Donnelley's Technology Center Manager, who coordinated development of the demand print and custom publishing initiative.

McGraw-Hill owns the Primis software (which has EDI-like features) and plans to license it to other publishers and printers. Kodak helped develop the Primis software.

Currently, McGraw-Hill's textbook catalog contains 6,000 chapters from textbooks in accounting, political science, marketing, engineering, math, and business law. McGraw-Hill expects to double the number of chapters by the end of the year. Donnelley printed 36 million pages in 1991 and expects to print 60 to 100 million pages in 1992.

Analysis: The publishing industry is in for dramatic change as the industry goes electronic. The McGraw-Hill and Donnelley experiment with on-demand publishing is one manifestation among many (such as commercial data base services and CD ROM publishing) of the shifting mix between electronic and paper delivered text. The possibilities are too vast for anyone to predict what will happen in the next five to ten years. Nonetheless, opportunities for EDI and electronic commerce systems to link organizations electronically are growing. In addition to on-demand services, McGraw-Hill is a user of Pubnet and Donnelley conducts conven-

Continued on page 10

Bookstore. . . from page 9

tional EDI with paper suppliers and publishers. More details on this are contained in INPUT's new report, *Electronic Commerce in the Media Industry*.

Sources:

Bill Webster, Manager, Strategic Projects, Addison-Wesley Publishing, 617-944-3700, ext. 2607.

John Conley, Director Sales and Marketing, R.R. Donnelley & Sons Company, 312-715-3311.

Bob Lynch, Custom Publishing Division Director, McGraw-Hill, Inc. 212-512-6828. ■

X.400 Software for EDI Arrives from Isocor

Despite the existence of implementation guidelines for the X.435 standard, no vendor except **Digital** offers OSI compatible EDI translation software. The first X.400 EDI products have now hit the street. They come from a company called Isocor (Santa Monica, CA) which is a spin-off of OSI software maker **Retix** (also in Santa Monica).

Isocor has introduced three products:

- ISOTRADE 800 and 400 is a family of EDI Access Units based on the new CCITT X.435 (Pedi) protocol specifications for encapsulating EDI messages. ISOTRADE works in conjunction with a conventional EDI translation software package. It manages the communications side of transmissions. It allows EDI users to interface with message-transport environments built according to either 1988 or 1984 versions of the X.400 standard.
- ISOPLEX 800, an X.400 (1988 version) transport engine for the IBM RS/6000, works in conjunction with ISOMAIL 800 (an earlier Isocor messaging product for local-area networks running on PCs).
- ISOSEC 800, an ISO-compliant family of security modules fully integrated at the 1988 X.400 level with ISOPLEX and ISOTRADE, provides entity authentication, data integrity and non-repudiation for both EDIFACT and other X.400 messages.

Isocor's software products allow EDI users to play in an X.400/OSI environment. Working in conjunction with an EDI translation software package, an Isocor X.400 server will wrap an EDI document in the X.400 protocol and send it out over the network (or to a local-area network or another node in a network).

Using X.400 is more than just attaching codes on the beginning and end of a digital file so that two CPUs can synchronize the transmission of the file. It involves providing reliability/tracing measures for transmission of messages over heterogeneous networks, receipt acknowledgements sent back to the sender, retransmission capabilities when part of the system fails, and other communication management functions.

The desirability of X.400 increases as more computers are networked within and among organizations. X.400 standardizes all actions that a network of CPU nodes must take in order to route a file through a network of nodes.

Isocor has been discussing product partnering with **EDI Able**, **St. Paul Software** and other EDI vendors. According to **Bjorn Ahlen**, Vice President of Marketing and Sales, Isocor sees its position not as an original equipment manufacturer, but more as a partner. This means that while the EDI vendor will help sell Isocor's product to the end user, Isocor will actually provide the maintenance and update of the product directly to the user.

Isocor is staking out the communications side of messaging. It views EDI as an application. Even though many other vendors see EDI as a systems or network software product that provides a basic systems function, Isocor sees EDI as an application to which its X.400 communications software is the systems software component.

Source:

Bjorn Ahlen, Vice President, Marketing and Sales, Isocor, 310-476-2671. ■

News Bits

BT North America (San Jose, CA) will supply **The Gillete Company** (Boston, MA) with international value-added networking services through its Global Network Services (GNS) package. Gillete plans to connect operations in 180 countries. So far, 10 sites have been connected. EDI, E-mail and virtual private networking services will come in the future.

American Business Computer received a $45 million, 3-year contract for its EDI-Server translation software package from government contractor **Federal Data Systems Corporation**.

Sears Communications Co. and **Philips Communications & Processing Services International** (a subsidiary of Philips Electronics N.V., of the Netherlands) have joined together to provide international data transport services—including EDI—to multinational business customers. Together, the partners will bring to the venture more than 445 network nodes in North and South America, Europe, and the Asia/Pacific region.

Immedia Infomatic Inc., a Montreal-based E-mail and EDI service provider, will provide an interorganizational E-mail service for users of QuickMail, the most popular LAN-based E-mail software for Macintosh and Apple computers. Immedia has entered into a strategic alliance with **CE Software, Inc.** (Iowa), the maker of QuickMail. Immedia's store-and-forward service offering, INTERCONNEXIONS, is reachable through a local call in over 30 countries around the world.

Future Three Software, Inc., provider of EDI translation software to the automotive supplier industry on IBM midrange computers, issued another version (2.3) of its Electronic Support Services package. The package allows Future Three users to receive product upgrades and a newsletter electronically, 24 hours a day. The software performs transmission reliability/verification checks, makes an audit trail of upgrades, lists software applications that may be affected by the upgrade, and performs other management functions.

SITA, the global Air Transport Information Services Organization, demonstrated at a recent United Nations conference that it could provide international EDI and file transfer services to any kind of business throughout the world (not just airline related). In a joint demonstration with **Alcatel**, **EDIFRANCE**, and **Unisys**, the conference site (in Colombia) was connected with the SITA network and real-time data exchanges were performed with a Colombian manufacturer, a design workshop data base in the Mediterranean, an importer in Mauritius, and data bases in Europe and Asia.

Correction:

In the December 1991 issue of the *EDI Reporter*, INPUT listed as a competitor to **National Systems Corporation** the Lexington, MA company, **Interchange Systems Inc.** Interchange was purchased by **Advantage Systems** last year and no longer exists as an independent company.

Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

April 13-16, Hyatt Regency Crystal City, Washington, D.C., CALS & EDI: Joint Initiatives through Electronic Commerce, Government Computer News/ Electronic Commerce Executive Forum, 301-445-4400.

May 11-13, Sheraton Seattle Hotel and Towers, EDI '92, Seattle, WA, DISA, (703) 548-7005.

May 17-20, The Palmer House, Chicago, IL, 5th Annual Corporate EFT/Financial EDI Conference, University of North Carolina at Chapel Hill, 312-726-7500.

May 17-20, The Registry Resort, Naples, FL, Transportation Technology Exhibition, American Trucking Associations/Management Systems Council, 703-838-1721.

June 23-24, Mayflower Hotel, Washington, D.C., 11th Annual International Trade and Computerization Conference, NCITD, 212-925-1400.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530; fax: 38-64-214-458).

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

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About INPUT

INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services.

Formed as a privately held corporation in 1974, INPUT's clients include more than 100 of the world's largest and most technically advanced companies.

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CD ROM Technology Used in EDI Systems

Triad Systems Corporation (Livermore, CA) is a $137 million (in 1991) company that builds turnkey information systems for auto parts and hardware stores. Triad's line of turnkey systems integrates customer support, inventory control, accounting, purchasing, and point-of-sale applications for a retail outlet. With a Triad system, the hardware or auto parts store owner has a complete information system for his/her business.

Triad's systems are built with EDI hooks and are typically interfaced with EDI networks: **Transnet** (for communicating with auto parts manufacturers) and **EagleLink/ORDERNET** (for the hard goods manufacturers).

Triad has incorporated CD ROM technology into its turnkey EDI systems. Its huge success with CD ROM underscores how excellently CD ROM technology matches EDI technology.

Triad has put 1,400 manufacturer catalogs of auto parts on a

Continued on next page

CD ROM Tech *. . . from page 1*

single CD ROM. This electronic catalog product contains information on over 1.8 million parts, including price, product number, the model/make/year of the cars the products are for, graphic illustrations, and specifications.

The catalog is used in two ways:

- It allows an auto store representative to help a store customer locate a part. The catalog essentially replaces those huge, 3-foot-wide paper catalogs that are usually mounted on a pedestal at the service counter.
- It serves as a buyer's guide for store representatives to order parts from suppliers.

One version of the catalog is aimed at auto repair shops and includes industry-standard labor rates and estimates for repair work.

Catalogs for hardware products are newer than the auto catalogs, having been released just last year. Every month, Triad ships updates of the catalog to customers.

Triad's CD ROM Business

Since 1988, when Triad first introduced the CD ROM Electronic Catalog, Triad has installed over 5,200 LaserCat workstations (the name of the specific workstation that uses the catalog).

Triad charges its customers a license fee and a monthly subscription fee averaging $200 for the Electronic Catalog service (customers can also get it delivered on-line from a centrally administered Triad data base).

INPUT estimates that in 1991, Triad garnered $10.5 million from its Electronic Catalog product.

According to **Dick Ross**, Triad Sales Manager, Triad is the fifth largest distributor of compact discs outside the music industry. Triad is now shipping 5,000 CD ROMs per month.

The Importance of Electronic Catalogs

Catalogs and directories are emerging as important components of the electronic commerce environment. UPC catalogs (now offered by **QRS/IBM** and **GE Information Systems**) were some of the first commercial catalog services to operate in an EDI environment. Since then others have emerged, some of them delivered on CD ROM, such as the gas industry's location code data base (see the *EDI Reporter International*, August 1991) or **NACHA**'s bank ACH capability directory.

EDI users and systems vendors should pay heed to Triad's success. CD ROM technology has a very prominent place in EDI systems. The adoption of CD ROM technology over the next five years may well prove to be an explosive market opportunity for EDI users and vendors—and, in some industries, completely re-engineer the industry, allowing new services and service providers to emerge and causing others to die out.

Contact: Dick Ross, Triad Sales Manager, 510-449-0606. ■

The Role of CD ROM in Electronic Data Interchange and Electronic Commerce

EDI involves the movement of data among data bases. CD ROM is an economical way of maintaining data in a data base. It is portable, inexpensive, and easy to use.

EDI and CD ROM technologies thus have a natural affinity for each other. Each can be used to support the processing of and to create data used in the other.

CD ROM production requires the gathering of lots of digitized information from a variety of sources and making it available through a single interface. To make a CD ROM, data must be moved from source applications to CD ROM authoring software to the final CD ROM delivery application, which may, in turn, feed data into still further applications. EDI applications can facilitate, generate, and be derived from this flow of data from application to application.

There are four basic ways CD ROM can join an EDI or electronic commerce application.

- Sending EDI transactions in a CD ROM via a courier rather than via a network. **MCI** is now offering this service to send telephone bill data to its largest customers.
- Using EDI to manufacture and distribute CD ROM materials. This is conventional EDI with the unconventional possibility of transmitting huge binary files (the text and graphics files of the published material) along with EDI transactions. Although some CD ROM titles can be ordered through a conventional EDI system, the real challenge is to electronically compile text and multimedia materials from different sources to make a single CD ROM title. A plethora of standards is being used for this purpose, including Office Document Architecture, Standard Graphical Mark-up Language, PostScript, Standard Query Language, QuickTime, and many others. EDI standards would act in concert with these other standards by providing the administrative information required for information exchanges. The Coalition of Network Information (part of the Washington, D.C.-based **Association of Research Libraries**) is working on projects to allow book and serial publishers to send electronic copies of their publications to universities. The universities will make the publications available to students and faculty via on-line systems.

- CD ROM product catalogs that allow ordering of products and other file transfers into software applications directly from the CD ROM. **Triad** (auto parts and hardgoods retail), **Baker and Taylor** (book retail), **Interstate Natural Gas Association** (pipeline transportation), and **Eclat** (construction industry) are all makers of CD ROM catalogs that interface with buying and inventory software systems.
- Metered CD ROM products. Users periodically must buy meter credits to gain further access to files contained in a CD ROM. **MarketPlace Information Corp.** (Waltham, MA), a spin-off of **Lotus Development Corporation,** launched MarketPlace Business, a CD ROM containing 7 million business mailing addresses. Downloading of the addresses is

Continued on next page

Role of CD ROM...*from page 3*

controlled by how many meter credits a user buys. With each new purchase of credits, the user is given a new password that releases further addresses. The selling of the data is itself an electronic commerce application. However, the buying and selling of credits and the administrating of passwords could be conducted electronically (today it is typically done over the phone with a credit card). ■

MarketPlace Information Corp.: Trading in Electronic Business Information

MarketPlace Information Corp. (Waltham, MA) is a privately held company founded by former employees of **Lotus Development Corp.** who had worked on Lotus' business information products. Lotus had cancelled the products due to a groundswell of opposition from privacy advocacy groups and the general population.

MarketPlace Information resurrected the business directory product, calling it MarketPlace Business. The CD ROM disc contains information on more than seven million businesses in the United States. The data fields of each business record are shown in Exhibit 1. A user can perform a search on any field.

MarketPlace Information charges users for the information on the disc on a quasi per-search basis, even though the user CD drive system is unconnected to MarketPlace Information.

Exhibit 1

Data from MarketPlace Business

- Business name
- Address (with ZIP+4 code)
- Telephone number
- Key contact
- Primary type of business (expressed as eight-digit SIC code)
- Annual sales (in ranges)
- Number of employees at site and total number in company (in ranges)
- Year company started
- Type of site (headquarters or branch)
- Ownership (public or private)
- DUNS number (unique identifier that allows comparison with other Dun & Bradstreet information)

Source: INPUT

Initially, the user pays MarketPlace Information $995 for a copy of the disc. The $995 payment covers access software, documentation, technical support on the phone, and three subsequent quarterly updates. The initial payment also gives the user 3,000 meter credits. All of the information (all data fields) on one company, except the contact telephone number, is worth a single credit. The contact telephone number for the company is worth another credit. Software built into the product accounts for the use of credits. When the user has expended all credits, the system closes. Further searches are not possible.

To continue using the disc, the user calls MarketPlace Information to buy more credits. When MarketPlace Information receives payment, it gives the user a new access code that the user types into the system. The access code allows more searches based on the amount of credits purchased.

MarketPlace Information has no plans at this time to allow users to electronically order more credits via a network. This kind of ordering is possible and may be preferred by some users.

MarketPlace Information buys its business data from **Dun & Bradstreet**. ■

Payment Mechanisms Crucial for Electronic Commerce in Business Information

With the proliferation of networked computing systems for transacting business (EDI, point-of-sale systems, credit card draft capture, electronic trading systems, etc.), it is becoming easier and easier to electronically "capture" business data. The ease with which the data can be transmitted among companies has created extensive "markets" for the buying and selling of data.

Consequently, pricing and payment mechanisms for business data (marketing and economic data; records of commercial transactions; credit profiles; lists; profiles of people, companies, products; etc.) are becoming increasingly important issues in the business information market.

Also, electronic technologies are reshaping the economics of delivering text and multimedia materials (magazine, news, legal data bases, photographs, video collections, etc.). In many cases, the new economics are detrimental to publishers, content producers and intellectual property owners.

These developments are precipitating a need among users and vendors of information systems to develop adequate compensatory mechanisms and build them into data interchange systems.

Methods are needed to monitor and distribute costs and revenues (royalties) of data use among suppliers and users of data. EDI, EDI/EFT and EDI-like systems may potentially play a central role in multiorganizational cost accounting and royalty allocation. The following are developments in this direction:

Continued on next page

Payment . . . from page 5

EDI Royalty Payment Applications

- The **Petrodex** series of EDI applications used in the petroleum industry has an EDI message type devoted to distributing the cash royalties of an individual oil well. Often the property upon which an oil well operates is owned by several parties. Each party is entitled to share in the proceeds of the well. The Check Stub Data Exchange (CDEX) program provides owners of oil-producing properties with sales and production data so that they can calculate royalty credits.

- **Pubnet** has introduced an EDI application whereby photocopy stores send an electronic "permission" message to book publishers. The message is a request to photocopy a portion of the given publisher's book. (Often, photocopy stores are asked by university professors to make mass copies of textbook and other copyrighted material for use in their courses. Photocopy stores are now required by law to receive permission from publishers. An electronic royalty payment procedure is being discussed.)

EDI and Phone Call Accounting Software

Phone call accounting software helps a company's telecommunications manager or accountant analyze the call traffic and expenses of the individual phones inside a company. Some vendors of this software are making their packages compatible with the ANSI X12 811 EDI telephone invoice. With this capability, a user company can seamlessly receive and process phone traffic expense data. Data bases of call expenses are representative of business information that directly impacts cost control actions.

Metered CD ROM

CD ROM data bases are now sold with tamper-proof meters built into them. The meters allow the user to extract a predetermined amount of data from the CD ROM (for example, a certain number of business addresses from a list). If the user wants to extract more information and has depleted the amount of credits, the user calls the publisher, pays for more credits (by credit card), and the publisher gives the user another access code which the user keys into the CD ROM. The new access code provides credits for further searching. Metered CD ROM has the advantage of pricing data at a variable rate (the more data you use, the more you must pay) rather than pricing data at a fixed rate (the CD ROM costs X dollars no matter if you use it once or a thousand times). Metered CD ROM may come to play an important role in compensating content providers as well as billing content users. Multiple providers may contribute to a single CD ROM data base as well as multiple users may use the data base. A meter could be placed for each department, workstation, and individual user on a network. All these meters could be repeated for each property, library or data base contained on the CD ROM product. EDI could play a role in communicating meter records and the corresponding payment instructions to various parties.

Xanadu Publishing

Xanadu is an on-line commercial data base concept. People retrieve works of intellectual property (text, audio, video, image, etc.) from it as well as contribute to it. An accounting system automatically bills users and compensates contributors. **American Information Exchange** (Palo Alto, CA) will be launching such a service in June. Software development advice and CASE tools are the initial kinds of information to be electronically exchanged.

Citation Services

Citation services are the information business equivalent of product movement data services, such as those offered by **Nielsen** or **Information Resources**. Citation services indicate how often an academic paper has been used as a reference in other papers. **Chemical Abstracts**, a for-profit subsidiary of the **American Chemical Association**, is the leader in providing electronic and paper citation data bases. These citation data bases may come to play an important role in determining the market value of certain works of intellectual property (for example, the pay-per-view price of a work rises the more frequently it is cited).

Product Movement Data Services

Already EDI and point-of-sale applications are feeding data bases that allow manufacturers and retailers to monitor the sales and movement of individual product brands. This is especially prevalent in the grocery and television/advertising industries. Product movement statistics determine effectiveness of promotions and consumer preferences. TV viewer statistics determine prices for commercial slots. The same movement/activity statistics could play a role in business information that is delivered electronically.

Network Management Software

Software that helps network managers monitor and optimize the use of network resources is another area in which EDI and EDI-like systems may potentially play a role. EDI messages could be used to request use of a device (say, a printer) or a service (for example, an X.500 directory). Another connection between EDI and network management is the monitoring of EDI traffic by an automatic system. Levi-Strauss has software that monitors the EDI traffic that sends and receives over the three EDI networks that it uses. This information helps the company reallocate network usage given volume and cost indicators. **Xerox PARC** researcher **Bernardo Huberman** has developed a message-based network optimizing tool where applications use credits to bid for network resources. Auction-based procedures built into software may again play a role in pricing and accounting for the use of intellectual property.

Conclusion

All these systems have in common the allocation of costs and/or revenues generated from a source of value obtainable via an electronic network. In all the examples except for the petroleum, phone-bill accounting, and network management systems, the source of value is information itself. In the other three examples, the information application allows the value of the resource to be determined. All the systems involve automatic generation of management-report information from user activity. All are examples of payment and pricing mechanisms that will be increasingly important when organizational electronic information systems are widely interconnected and intellectual and physical properties are traded via electronic networks.

The above examples are aspects of the technical solution to the payment and pricing issues involved in information exchange. Legal and institutional issues determining ownership and rights are more complicated domains in which work needs to be done also. ■

Premenos Takes Back IBM's Midrange EDI Software

IBM will refrain from marketing its DataInterchange/400, 36 and 38 translation software packages. Premenos Corp. (Concord, CA), the original developer of IBM's midrange EDI translation software, will be the sole source of maintenance and technical support for the software line and will incorporate IBM's modifications into its own line. The new software—EDI/400, EDI/36 and EDI/38—will be marketed by Premenos, IBM and IBM business partners.

Premenos (formerly ACS Premenos) makes EDI translation software for the AS/400, Systems 36/38, and RS/6000 computers. It has approximately 2,000 worldwide installations in the retail, automotive, transportation, apparel, grocery, health care, petrochemical and other industries.

Contact: Mike Nelson, Vice President, Marketing, Premenos Corp. 510-602-2000. ■

Update: Electronic Data Systems' EDI Offering

Last summer, EDS purchased the French systems integration and software house, **SD-Scicon**. With the purchase, EDS acquired two ready-to-sell EDI software packages: an IBM mainframe (MVS) product and a Windows-based PC product. EDS already has a DOS package (EDI*ASSET), a UNIX package (EDI*EXPERT), and its own MVS EDI translation software package (EDS*AIM). EDS makes available EFT services and file transfer services over its network, EDSNET. It also resells **Trinary Systems**' EDI translation software, which runs on **Digital** and **Hewlett-Packard** computers. Altogether, EDS has the widest line of EDI translation software, able to accommodate almost any user site's hardware, among EDI software vendors.

EDS' data network, EDSNET, has approximately 450 access points in the U.S. and others in 130 countries around the world. In late 1991, the EDS network, which is SNA-based, was made interfacable to networks and transmissions that send data via the X.25 packet switched mode.

EDS's network is the network behind the EDI programs of **Kmart**, **General Motors** (of course), **Tandem**, and a couple of others. ■

Case in Point: EDI Redefines a Market

Customs brokers and forwarders are concerned about EDI-enabled "national entry processing."

A classic example of how EDI redefines the competitive environment of an industry is in the making with U.S. Customs' automation program. This case illustrates how technology and the legal framework determine where a "market" exists and who can and cannot play in it.

The Customs Modernization and Informed Compliance Act (HR 3935), presently before the U.S. Congress, intends to establish the legal framework for new automated operations that Customs is pursuing.

One aspect of automation addressed by the bill is determining the appropriate geographical location in which imported goods can be cleared and released by Customs. For cargoes that can be cleared entirely electronically, Customs has proposed that the physical place where the goods are warehoused need not necessarily be the place where the clearing procedure actually occurs. When the documentation is electronically submitted, the clearing operation should be moved to any available District Director anywhere in the country. In the nomenclature of the bill, the clearing operation is to be moved to the "port of convenience."

This "national entry processing" has brokers and forwarders up in arms because they—rightfully—see their business niches being obliterated. A broker who serves the Port of New York/New Jersey suddenly is not needed despite the fact that his/her client's cargoes still pass through his/her territory. But the brokers and forwarders are not fighting automation *per se*.

They are fighting for a more precise definition of what it means for a release of cargo to be fully electronic (paperless). If the broker's Customs entry is submitted electronically but further paper documentation is required, it is unclear whether this is considered an electronic release or not.

In cases where release cannot be completed without a broker filing some kind of paper document, the brokers and forwarders are asking Congress to have the clearing operation conducted at the port where the cargo is physically located.

Arthur Litman, president of the National Customs Brokers and Forwarders Association of America, recently testified at the Capitol.

"We recognize that, in a truly paperless transaction, there is no demonstrable need to involve [the port District Director] in the transaction and will accede to fixing responsibility with Customs Service personnel at a 'port of convenience.' However, when there are exceptions to full automation (that is, when release cannot be performed in a paperless mode), we must establish a responsible party. Logically that is where the vast majority of the interaction will take place: the port where the cargo is."

Speaking on behalf of his association, which represents almost all of the 2,000 customs brokers and freight forwarders in the country, Mr. Litman also asked Congress to modify some of the bill's provisions. In particular, he asked for a reduction of Customs' "EDI or die" requirements and that more testing and evaluation of the system be conducted before it is made mandatory.

Continued on next page

Customs . . . from page 9

"*We* must pay for and operate these automated systems," said Mr. Litman. "We want automation to be 'competition-neutral'—that is, not to advantage any single segment of our community over another."

Analysis: The case of Customs automation clearly illustrates how legislation and technology can redefine competitive environments. "Free market" notions of business activity are more mythical than real. All business activity occurs within a larger framework of legal institutions. And, as society becomes more technological (and EDI is an archetypal example of advanced technology because it suggests a paperless society), technological standards for interoperability become a significant aspect of the institutional framework. Standards are similar to laws and, indeed, to EDI trading partner agreements in that all are specified by people, and do not naturally evolve according to "invisible hand" forces as in more traditional competitive scenarios. The point is that marketplace players must involve themselves in the forums, committees, tribunals, etc. where the institutional framework for business is established. It is through verbal negotiation that some of the most important conditions for conducting business are established, not through "voting with one's feet" as the free market theory maintains. Pure market processes are not the only factors that determine winners and losers these days. Paying attention only to price and product features is not enough.

The customs brokers and forwarders of the United States are proactively building their own competitive environment.

Arthur Litman, President, National Customs Brokers and Forwarders Association of America, 310-649-3210. ■

News Bits

The **Healthcare EDI Corporation**, a consortium of multi-hospital groups, health care providers and suppliers, has signed agreements with **AT&T EasyLink Services** and **Sears Communications Company** to provide EDI network services for members.

Kenneth Shoquist and **Mark Payne**, formerly EDI managers at **Texas Instruments**, left TI last Fall and are independent consultants. Pursuit of greener pastures and getting out of a large corporate environment were the basic reasons, according to Mr. Payne. In addition to private consulting for software companies, both are working with the **Aerospace Industries Association** in organizing the Aerotech series of conferences. Both are based in the greater Dallas area.

William Esrey, Chairman and CEO of **Sprint** (now wholly owned by Sprint since GTE sold out its portion) said that in 1991 orders for Sprint's data services increased by 50% over 1990. Sprint provides 40% of the FTS 2000 network for advanced communications services to the U.S. government.

Infonet extended its data communications network to Taiwan and intends to connect with Taiwan's national public data network, **PACNET**. Infonet also has contracted with **ATTIS de Mexico S.A.** for the latter to market, sell, and support Infonet's VAN services in Mexico. ATTIS is a Mexican company closely associated with **ATTIS Europe**, which specializes in the design and creation of information systems and has developed international videotex services. Infonet also has an agreement with **Telecomunicaciones de Mexico**, which is responsible for upgrading and expanding Infonet's worldwide network in Mexico.

Kleinschmidt added a "Check for Acknowledgement" service to its EDI VAN services. For shippers sending bills of lading to railroads via Kleinschmidt's VAN, Kleinschmidt will verify that the railroad received the bill of lading. If the railroad sends no acknowledgement within a specified period of time, Kleinschmidt will contact the railroad and attempt to resolve the problem.

Sterling Software Inc.'s ORDERNET Services Division made available its GENTRAN EDI translation software to run on **Fujitsu** MSP (operating system) computers and its TRANSLATOR EDI translation software for **Hitachi** VOS1 and VOS3 computers.

American Business Computer opened an office in Minneapolis, MN and hired a new sales manager. ■

Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

May 5-7, Chicago, IL, Distribution/Computer Expo, C.S. Report Inc., 800-338-4112.

May 11-13, Sheraton Seattle Hotel and Towers, EDI '92, Seattle, WA, DISA, (703) 548-7005.

May 17-20, The Palmer House, Chicago, IL, 5th Annual Corporate EFT/Financial EDI Conference, University of North Carolina at Chapel Hill, 312-726-7500.

May 17-20, The Registry Resort, Naples, FL, Transportation Technology Exhibition, American Trucking Associations/Management Systems Council, 703-838-1721.

May 17-20, The Registry Resort, Naples, FL, 26th National Conference & Computer Exhibition, American Trucking Association, 703-838-1721.

June 16-18, O'Hare Exposition Center, Chicago, IL, ID Expo, ID Systems Magazine, 203-374-1411.

June 17-19, Hyatt Regency O'Hare, Chicago, IL, The Health Industry EDI/Auto ID Conference & Trade Show, Health Industry Business Communications Council, 602-381-1093.

June 23-24, Mayflower Hotel, Washington, D.C., International Trade and Computerization Conference, NCITD The International Trade Facilitation Council, 212-925-1400.

June 23-24, Mayflower Hotel, Washington, D.C., 11th Annual International Trade and Computerization Conference, NCITD, 212-925-1400.

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

October 4-6, San Francisco, CA, INPUT's Annual Client Conference, INPUT, 415-961-3300.

October 11-14, Convention Center, San Antonio, TX, Annual Conference, Council of Logistics Management, 708-574-0985.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530; fax: 38-64-214-458). ■

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INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services.

Formed as a privately held corporation in 1974, INPUT's clients include more than 100 of the world's largest and most technically advanced companies.

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Industry Structure Shapes Japan's Adoption of EDI—*from INPUT's Tokyo office*

In recent years, the term "keiretsu," or group management, has become popular in the U.S. Often the term is used to describe how the Japanese market is not open. Japanese keiretsus are seen as barriers to U.S. companies entering the Japanese market.

The keiretsu is indeed a barrier, but it is also one of the strengths of Japanese industry. We can say it is a kind of "outsourcing."

In the manufacturing sector, for example, Japanese manufacturers use more parts suppliers as subcontractors than do U.S. manufacturers. The main purpose of such outsourcing is to reduce labor costs as well as to source parts more efficiently.

Continued on next page

Japan *...from page 1*

In this environment, a hub company has strong control over the parts suppliers. This differential of power is affecting the development of EDI in Japan.

Each automobile manufacturer, for example, has a proprietary purchasing VAN and requires its parts makers to use its proprietary format. Hub companies don't consider it inconvenient to use proprietary formats. Therefore, no automobile manufacturer is considering implementing standardized EDI. Parts suppliers are dissatisfied with the situation but, in general, don't have enough power to ask hub companies to change the format.

Now however, most hub companies will consider switching to EDI standards when they replace or enhance current information systems. The reasons for this are:

- Significant efforts and costs are required to develop and maintain proprietary systems.
- When the number of business connections becomes large, it will be very difficult for hub companies to support business partners for software and its maintenance.
- It is expected that cross-industry electronic data interchange will grow in the future. When this happens, even big companies will be unable to maintain their proprietary systems.

Large companies are beginning to examine the use of standard EDI. This portends well for EDI's future in Japan. It is possible that the introduction of standard EDI will increase rapidly among large hub companies in Japan in the next few years.

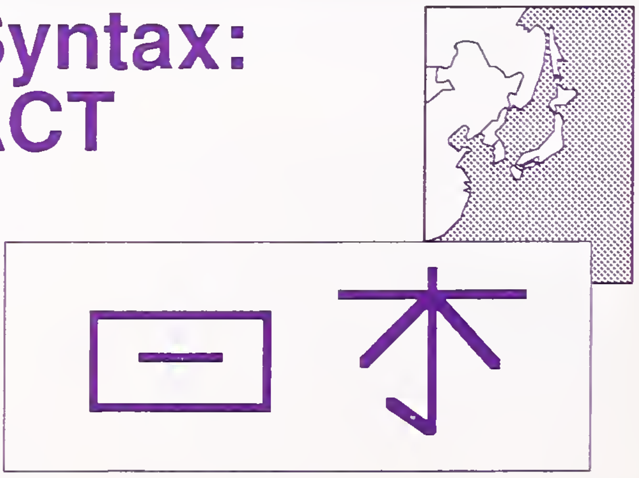
Japan's Economic Downturn

The Japanese economy is experiencing a downturn in 1992. In such a climate, companies make great efforts to reduce costs and be more cooperative, rather than be aggressive toward competitors. These tendencies will foster the growth of EDI in Japan.

Japanese companies also tend to go in the same direction as their competitors. If a leading company introduces EDI, other companies in the industry will do the same. When popularization begins, it will spread very rapidly.

INPUT has just published *The EDI Market in Japan, 1992-1997*, from which this article was excerpted. To order the report or for more information, contact any INPUT office listed on the back page. ■

Japan Adopts Its Own EDI Syntax: Neither ANSI X12 Nor EDIFACT



The Center for the Informatization of Industry (CII) in the Japan Information Processing Development Center (JIPDEC/CII) has released the CII syntax rules as a national standard for EDI, effective April 1, 1992. Based on this syntax, each industry will develop an industrial standard individually.

The CII syntax is different from EDIFACT and ANSI X12.

JIPDEC/CII had planned to add Japanese-specific factors to EDIFACT to create a national standard. It found, however, that it was impossible to add the Japanese factors completely to EDIFACT.

Domestic trade among Japanese companies is different from international trade in terms of business procedures. Therefore, the CII syntax rules have been developed separately from EDIFACT, although they can be translated into EDIFACT, according to CII. Translation between CII and other EDI formats, however, has not been tried.

To accommodate Kanji (and Chinese ideographic text), the CII architecture has two-byte-long characters (as opposed to the single-byte characters in all Roman alphabet-based computers). This two-byte character design could prove to be a major stumbling block for automatic conversion between CII and other EDI formats.

Exhibit 1 lists the characteristics of the CII syntax.

Although CII syntax (which is different from EDIFACT) is not being adopted for domestic trade, there is no reason for Japanese companies not to use EDIFACT for international trade.

Exhibit 1

Characteristics of the CII Syntax

- Has variable length format
- Supports Japanese characters (Kanji, Hiragana, and Katakana)
- Can be used for complex business procedures
- Its structure is capable of achieving the length or message element minimum
- 61,439 is the maximum number of data elements
- Supports OSI transmission protocols (FTAM and MHS), the ZENGIN protocol and the Japan Chainstore Association (JCA) protocol
- Runs on the networks supporting EDIFACT (ISO 9735)
- Is compatible with the Electronic Industries Association of Japan (EIAJ) standard

Source: INPUT

Continued on next page

EDI Syntax...from page 3

For more information about the directions, issues, and activity levels of EDI in Japan, inquire about INPUT's recently published report, *The EDI Market in Japan, 1992-1997*. Contact any INPUT office listed on the back page. ■

Vendor Roundup

Ameritech Launches EDI Service

Ameritech has launched an EDI/electronic commerce offering, Ameritech Information Exchange Management (AIEM). It provides traditional batch, store-and-forward EDI as well as real-time and interactive EDI.

Ameritech officials want to expand the AIEM offering beyond traditional EDI to become an "information systems application gateway." Customers would be able to connect all applications through the gateway, not just those that had EDI translation software or other application-dependent interfaces.

Ameritech will make EDI and EDI-like software products available to customers.

Ameritech has reseller agreements with three EDI translation software companies. TSI International (Wilton, CT) provides Ameritech with software for mainframe platforms; Blue Rainbow Software International Corp. (Marietta, GA) provides midrange software; and Supply Tech, Inc. (Ann Arbor, MI) provides the micro software.

In addition, Ameritech has purchased applications software companies in a variety of industries including health care, library administration, insurance, banking, and manufacturing. It intends to provide full, interorganizational, electronic commerce solutions—from application to application—to customers. ■

GEIS Upgrades EDI Software, Adds New Network Services

GEIS is expanding its line of EDI software and services. Key new products are:

- EDI*Benchmark. This mainframe translation software, due out in the third quarter of 1992, will succeed GEIS' EDI*Central product. EDI*Benchmark has a mapping tool that allows users to conduct all mapping tasks on a PC and then upload the mapping tables to the mainframe. EDI*Central had no mapper. GEIS' MapMate is made by Paper Free Systems, Inc. (Washington, DC).
- Midrange/UNIX EDI translator. GEIS will now begin private-labeling the UNIX

translator for midrange platforms built by American Business Computer (Ann Arbor, MI). The product gives GEIS a midrange EDI software package; it previously had none.

- EDI-to-fax network service for hub companies that want to communicate with all suppliers via EDI. GEIS converts outgoing POs to fax transmissions and generates EDI acknowledgements.

- COEP accounts payable. GEIS launched Customer Originated Electronic Payments almost two years ago. At that time it allowed a company to trigger electronic payments to itself at its customers' banks. (Obviously, customers had to agree to this.) Now, GEIS has the accounts payable option of COEP in place. The company can electronically pay its suppliers using the system, which is largely a network service with some software at the user site. ■

More EDI Software Companies Seek Channel Relationships

Building alliances is proving to be an important strategy for companies that sell only EDI software. User organizations typically want to buy a solution, not a technology. EDI is a technology. It is one component of a more general solution. The more general solution meets the challenge of better coordinating the activities of the user organization with those of its trading partners.

A brief listing of recent agreements between EDI software providers follows:

American Business Computer. Agreed to have GEIS offer its midrange software under private label. American is also providing AT&T, NCR and Vocam Systems with its translator, to satisfy large contracts that these companies have with their customers. Says Kimba Vasquez, president of ABC, "We prefer to sell through alliances."

TSI International. Has a nonexclusive marketing agreement that allows Ameritech to sell TSI's mainframe and PC EDI translation software. Ameritech is positioning TSI's software for use in electronically billing phone-services customers.

Blue Rainbow Software International. Ameritech, GEIS Europe & Asia, IBM Europe and the Motor Equipment Manufacturers' Association have signed co-marketing agreements to sell Blue Rainbow software. More relationships are in the works, according to U.S. divisional president, Hans Plotzeneder.

St. Paul Software. Is now providing RAILINC customers with its own Interconn EDI software for IBM PCs, compatibles and PS/2s. (The software will replace RAILINC's EDI/Synapse product.) St. Paul has a reseller agreement with Control Data Corp. Asia (a leader in systems

Continued on next page

Sterling Upgrades Mainframe and PC EDI Software

Sterling Software has released new versions of its Gentran PC and Gentran MVS EDI translation software packages. The MVS product has new management and auditing features for the translation process.

Gentran PC's new feature is its "document turnaround." Data from an incoming purchase order can be automatically converted into an outbound invoice. ■

Relationships *...from page 5*

integration in Asia). It is working with Etrinell, a Norwegian consulting company, to market EDI in Scandinavia.

EDI Solutions, Inc. Entered an equity partnership with Maersk Data USA (see story below), a data processing service bureau and VAN for transportation companies.

EDI Inc. Builds the EDI translation engine for applications software from Information Associates.

Information Associates (Rochester, NY) sells administrative software to the university marketplace. The company is now offering an EDI capability to electronically send student transcripts. The capability is sold as a module of its set of applications software products. ■

Will Maersk Offer EDI VAN Services?

The privately held Maersk shipping line has long been a user of EDI. Now, a sister company to the steamship company, Maersk Data Services, is taking action that could position it as a vendor of EDI software and network services.

Maersk Data has invested money and taken an equity position with mainframe EDI software maker, EDI Solutions, Inc. (Minneapolis). The amount of the investment was undisclosed. Furthermore, according to shipping industry sources, A.P. Moeller Group, the large Danish conglomerate that owns Maersk, is negotiating with the Danish government to handle all the data communications in and out of Denmark.

Denmark is in the process of privatizing its PTT, and A.P. Moeller is considering entering the VAN business. A.P. Moeller, whose total sales and net worth are not publicly disclosed, is considered by those knowledgeable about it to be comparable to a Fortune 25 company. The huge conglomerate has interests in transportation, oil, telecommunications and retail. It operates all resupply, transport and services for Denmark's North Sea oil platforms. The company owns department stores. Altogether, it supposedly controls two-thirds of Denmark's gross national product.

Maersk operates a commercial data processing service. It has a worldwide network with separately incorporated but wholly integrated data processing facilities in Japan, the U.S., and Europe. Other A.P. Moeller companies as well as outside companies use the services of Maersk Data. Maersk rivals GEIS, BT North America, IBM Information Network and Infonet in terms of the global reach of its network.

Spokespersons at Maersk and at EDI Solutions held that the joint venture was more of a technology transfer arrangement. Maersk is a customer of EDI Solutions and helped the software maker develop its real-time translation capability. ■

Texas Instruments Commercializes Its EDI/Communications Gateway

It's official. Texas Instruments is in the EDI software business. After some setbacks in getting started, TI is commercializing the high-performance EDI translation software and X.400 communications gateway that it had developed for its own use. (TI conducts EDI with 1,800 trading partners in 20 countries.)

TI's EDI Translator and Gateway offerings continue TI's move into the software and service business. In 1989, TI founded the Information Technology Group with the mission of commercializing internally developed information systems. The group offers management information systems, computer-integrated manufacturing products, a comprehensive CASE development tool (the Information Engineering Facility) and professional services. Last year, the group had over $1 billion in sales.

TI's Translator and Gateway are high-end software products with high-end price tags. The translator, including a mapper, a test facility and a management module, is priced at $85,000. The gateway product is priced at $90,000. An event-driven module for the translator sells for an additional $30,000.

TI intends to make a UNIX version available by the end of the year. And early next year, TI will offer a PC version running in a Windows environment. ■

EDI Vendor Profile: Blue Rainbow Software International Corporation

According to Hans Plotzeneder, president of Blue Rainbow's U.S. operations, Blue Rainbow is the largest provider of midrange EDI software outside the U.S. Ninety percent of its 450 installations are located in Europe. The company is headquartered in the U.K. and will probably gross $6 million in revenues worldwide in 1992. Blue Rainbow has 42 employees worldwide.

Blue Rainbow began U.S. operations earlier this year.

Already, Blue Rainbow's midrange translation software is under private label with four large EDI providers: GE Information Services (in Europe), Motor Equipment Manufacturers' Association (MEMA/Transnet), IBM (in Europe) and, just recently, Ameritech.

Blue Rainbow's products are priced from $4,900 to $28,000.

Blue Rainbow is coming out with an E-mail capability for its software. ■

Air Cargo Systems Take Off

The year 1992 looks like it will be the year air freight carriers went into EDI in a big way. Within a matter of a few months, three air carrier consortia launched air freight EDI network service offerings. Some carriers belong to more than one consortium.

- Encompass, a joint venture between CSX and AMR (parent of American Airlines), launched multi-modal freight tracking services. Encompass tracks air shipments as well as deep sea, trucking, and railroad shipments.
- Scitor Inc., a subsidiary of SITA, launched a system.
- Traxon Worldwide, formerly known as Global Logistics System, is a venture of Cathay Pacific Airways Ltd., Air France, Japan Airlines and Lufthansa German Airlines. ■

The Needs of Media Industry Electronic Commerce

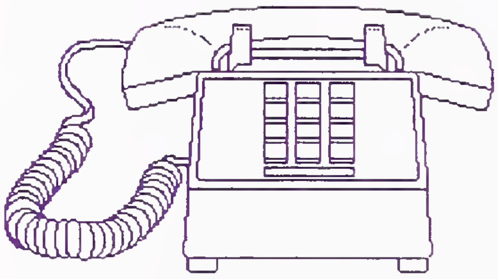
Developments in information technologies are enabling companies to remake the traditional media value chains—television, radio, film, telephone, publishing, and advertising—into a whole new kind of media: an integrated, society-wide, cybernetic coupling mechanism to coordinate human action, work-related and non-work-related.

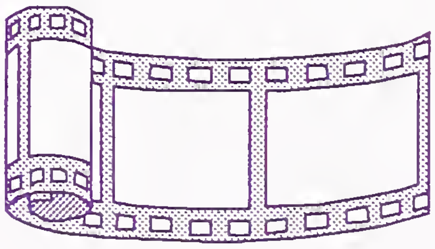
The resultant trend is toward eliminating intermediaries so as to bring the following into direct contact with each other:

- Manufacturers/advertisers and consumers
- Authors/producers and readers/viewers
- Companies and their trading partners

With the reconfiguration of market players and services in media, market interfaces between companies will change. The opportunities to provide electronic mechanisms that facilitate and clear market transactions—electronic commerce—will likewise change with these industry reconfigurations.

The segments in the media industry that INPUT believes are the most "ripe" for re-engineering with electronic commerce systems are:





- *Data Processing and EDI Services Among Advertising Agencies, Television and Radio Networks, and Advertisers.* Already $500 million to $1 billion is spent on data processing services in this area. Initiatives are under way and the users in these organizations are expressing guarded readiness to use more efficient EDI and EDI-like systems.
- *Subscription Agenting Between Magazine and Journal Publishers and Libraries.* Subscription agenting in the non-consumer library market is a $1 billion-plus industry. Much of the consolidation of communications between libraries and publishers potentially can be automated. The service of the subscription agent could potentially be taken over by a value-added network provider.
- *Audience Measurement Services for Television Viewing and Movie Theater Attendance.* Audience measurement is becoming more of a science, with people meters and interactive cable TV in the television market.

Movie house attendance is critical market data, demanding real-time reporting (for weekend releases). There is a huge market here for electronically collecting, processing, and distributing this data. Work on these processes is already under way.

- *Electronic Ordering Systems for Bookstores for New and Used Books.* Pubnet and Telebook are already viable EDI systems in the new textbook market, earning over $3 million per year combined. Turnkey bookstore systems—particularly at universities—are providing hooks to the outside world. The resale of used textbooks—a half-billion-dollar industry—is an industry actively looking for an EDI solution.

- *On-Demand Publishing Services Linking Universities, Publishers, and Printers.* On-demand publishing has the greatest capacity to remake the publishing world. The concept takes just-in-time to the limit: textbook inventories would not exist. Only until custom-created by the professor would the book come into existence. Many traditional EDI as well as new kinds of commercial network services (including data bases of texts and educational materials) are possible in this exciting new delivery mode for publications.

- *All Library Systems (Academic and Public), Including Those for Ordering Holding Materials, Cataloging/Administrating Them, and Electronic Information Services.* Libraries may be the most changed of all media-related institutions. Forty percent of an advanced university's library acquisitions (in dollars) is never looked at again after being filed on the shelf. Libraries are looking for ways to replace this expensive acquisition strategy with pay-per-view style alternatives (such as electronic information services or metered/licensed CD ROM data bases). Libraries want to acquire materials just in time rather just in case. Electronic access is their promised land. If libraries can make it to their promised land and achieve full or close to full electronic access to materials, the impact on book, magazine, and electronic information publishing will be immense.

In addition to the above-mentioned industry-specific niches, other cross-industry market needs/opportunities are:

- *Electronic Information and Processing Services That Facilitate Commercial Exchanges.* The media industry segment classified as "business information" will grow in size relative to the other segments. Services that span the many kinds of communications that go into a commercial exchange—including marketing, searching, negotiating, transacting, paying, post-sale maintenance, customer support, enforcement of contract, and market analysis—will be made available on the ubiquitous electronic network. Specifically, these services include product catalogs, directories, specialized record data bases, product maintenance, customer support services, trading partner/community coordination services, and transaction and market-share analysis (derived from records of earlier on-network transactions), among others.

- *Pricing, Payment, and Accounting Mechanisms for the Sale of Business and Other Information Delivered Electronically.* The ability to electronically "capture" business data and then easily transmit it among companies is creating extensive "markets" for the buying and selling of data. For example, point-of-sale and credit card transaction records gathered from retailers is a burgeoning information market. Also, electronic information services (Dialog, Mead Data Central, etc.), CD ROM publishing and pay-per-view television are altering the economics of publishing/producing intellectual

Continued on next page

Media ...from page 9

Exhibit 2

The Media Industry Compared to Others

	Manufacturing Industries	Media Industry
Essential Product Distinction	Tangible. Product is different from the information about the product	Intangible. Product is the information itself.
The Added Value of the Product	An instrument/tool with which to act. A component to be placed in another product. A consumable	An interpretative context, a paradigm, a myth, a framework/context for action and thinking. Provides the decision-making and meaning context for work and play, including the use of tools, the pursuit of recreational activities, etc.
Production Costs	Marginal cost (MC) of production stays above zero. Product is difficult to replicate. Marginal cost may decrease with volume but eventually plateaus. Constant, positive MC insures some protection from competitors entering the market.	Marginal cost of production goes to zero. Product is easy to replicate. Competitors can enter the market. Suppliers and customers are competitors.
Value Chain Characteristics	Series of production stages is fairly discrete and separable into a sequence of steps. At each stage, a number of providers can efficiently compete in the market. Commodity products, many vendors. Hierarchy	All products are unique. Each provider is a monopoly. Every vendor a niche player. Vendors become gateways. Network
Impact of IS	Reduces capital investment in inventories/materiel. Value chain is composed of decentralized, autonomous, tightly coordinated units.	Users become vendors. Vendors find new niches. Continual flux. Value chain not really a "chain" but a constantly re-configuring network of processing centers and gateways.

Source: INPUT

properties. These developments are precipitating a need to build compensatory mechanisms into data interchange systems (including metered CD ROM, EDI/EFT royalty payments, call and network-resource accounting software, citation services, product movement data services, pay-per-view billing systems, Xanadu publishing scenarios, and others).

Exhibit 2 highlights the unique characteristics of the media industry relative to manufacturing industries. These characteristics have important consequences when interorganizational electronic systems are introduced into the industry. For more information, inquire at any INPUT office about the new report, *Electronic Commerce in the Media Industry.* ■

Errata: In the last issue, we reported that Tandem uses the EDS network for EDI. This is incorrect.

Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

June 16-18, O'Hare Exposition Center, Chicago, IL, ID Expo, ID Systems Magazine, 203-374-1411.

June 17-19, Hyatt Regency O'Hare, Chicago, IL, The Health Industry EDI/Auto ID Conference & Trade Show, Health Industry Business Communications Council, 602-381-1093.

June 23-24, Mayflower Hotel, Washington, D.C., International Trade and Computerization Conference, NCITD, The International Trade Facilitation Council, 212-925-1400.

June 23-24, Mayflower Hotel, Washington, D.C., 11th Annual International Trade and Computerization Conference, NCITD, 212-925-1400.

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

October 4-6, San Francisco, CA, INPUT's Annual Client Conference, INPUT, 415-961-3300.

October 11-14, Convention Center, San Antonio, TX, Annual Conference, Council of Logistics Management, 708-574-0985.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530; fax: 38-64-214-458). ■

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Why Are Some EDI Users Dissatisfied with EDI?

In a recent survey of 140 EDI users, INPUT asked a series of questions pertaining to how satisfied people are with their EDI programs. Here are some of the salient points of our findings. (For the complete picture, see INPUT's report, *U.S. Electronic Data Interchange Market Report, 1992-1997*, due out in July.)

For the most part, EDI users indicate that they are satisfied with their EDI programs. However, users who are the most satisfied differ markedly from those who are the least satisfied.

Exhibit 1 shows the percentage distribution of users' respective levels of satisfaction.

What is the profile of a dissatisfied EDI user? What is the profile of a satisfied EDI user?

INPUT isolated the least satisfied group of EDI users and examined their responses to other questions to determine if there were any common points. INPUT repeated this process for the most satisfied group.

Comparison: Dissatisfied versus Satisfied EDI Users

In a word, the dissatisfied EDI user is typically a *re-actor* to events, while the satisfied EDI user is a *pro-actor*.

The dissatisfied user is doing EDI because one of its customers requested that it do so. It is usually a "spoke" company.

The satisfied user is doing EDI because it seeks operational efficiencies, cost savings, and speed. Secondarily, it seeks customer satisfaction. More often than not it will be a "hub" company, but not necessarily.

Continued on next page

Dissatisfied

. from page 1

Exhibit 1

User Satisfaction with EDI Program

	Percent
Dissatisfied	3
Somewhat Dissatisfied	7
Neither	20
Somewhat Satisfied	39
Satisfied	31

Source: INPUT

Exhibit 2

Dissatisfied versus Satisfied EDI Users

Dissatisfied	Satisfied
Spoke company	Hub, sometimes spoke
Re-actor	Pro-actor
EDI to satisfy customer	EDI to gain efficiency
Small EDI staff	Large EDI staff
EDI is only a cost	EDI has benefits
Resents EDI and trading partners	Concerned that trading partner isn't getting value

Source: INPUT

Exhibit 2 compares characteristics of dissatisfied and satisfied EDI users.

Complaints—A sample of the complaints of dissatisfied EDI users is given in Exhibit 3.

Dissatisfied users typically considered themselves lacking in adequate resources to do the job; they wanted more support from vendors; and they felt that EDI was simply a burden that gave no benefit other than maintaining a customer.

Satisfied users, for the most part, had no complaints.

Obstacles—Dissatisfied users were almost unanimous in identifying data mapping and integration of EDI with applications software as the biggest obstacles in implementing EDI. However, these obstacles are the most frequently cited among all users, dissatisfied or satisfied, as indicated below.

Satisfied users also indicated that integration with applications was a big obstacle to implementation.

Staffing—In INPUT's sample, satisfied user organizations had more than twice the EDI personnel of dissatisfied organizations.

Exhibit 4 shows the average staff sizes for satisfied and dissatisfied EDI organizations.

Satisfied users were better able to quantify the impact of EDI on their operations than were dissatisfied users. This underscores the point that satisfied users are typically proactively implementing EDI. They have specific objectives and are looking for specific results. This is not to say, however, that quantification is a requirement for satisfaction. Most of the

Exhibit 3

Complaints of Dissatisfied EDI Users

- “Time waster for us, but good for the customers”
- “EDI [software] is an insult to the intelligence; takes too long to figure out”
- “Total waste of time; fax works better”
- “Problems with network carriers and software; too slow”

Source: INPUT

Exhibit 4

Staff Size: Satisfied versus Dissatisfied EDI Users

	Average EDI Staff
Satisfied User Organization	4
Dissatisfied User Organization	2

Source: INPUT

satisfied EDI users spoke of the impact of EDI only in qualitative terms (see below).

Obstacles in Implementing EDI

In an open-ended question, users were asked to name the chief obstacles in implementing EDI. INPUT classified their responses in the categories listed in Exhibit 5.

Change and education—different sides of the same coin—are the most frequently cited obstacles. This shows that business issues—the strategic context in which EDI plays a part—are more important than simple technologies. EDI has to do with changing work patterns and routine behavior. Working with people, getting them to see new ways of working, is the real challenge of EDI.

For the complete results of INPUT’s latest EDI user survey, order a copy of *U.S. Electronic Data Interchange Market Report, 1992-1997* at the nearest INPUT office (see back page). ■

Exhibit 5

Obstacles in Implementing EDI

- Resistance to/fear of change
  - Users inside organization
  - Trading partners
- Lack of education
- Integration (with application)
- Time consuming
- Data format difficulties (lack of standards, unique mappings)
- Lack of money
- Lack of personnel
- Costs exceed benefits
- Deficiencies in EDI vendor offerings
- Other

Source: INPUT

Does Electronic Commerce Kill Industry?

A Speculative Airline Industry Post-Mortem

What happens in an industry when most of its commercial transactions are carried out electronically? INPUT, looking at the airline industry, proposes that it goes like this:

(1) Standardization of product

(2) Singular/universal marketplace of buyers and sellers

(3) Commoditization of product

(4) Perfect information for buyers

(5) Relentless price warfare on the part of sellers

(6) Consolidation of sellers

(7) More consolidation of sellers

(8) *More* consolidation of sellers

(9) Collapse of the industry

INPUT maintains that this is the course the airline industry has taken over the past ten to twenty years. INPUT proposes that airline computer reservation systems—long heralded as the best example of using computers as competitive tools—are largely responsible for the collapse of competition in the airline industry.

Deregulation of airlines set the gears of consolidation in motion. It was the computer reservation systems (CRS), however, that brought swift consummation of the consolidation.

Deregulation effectively allowed the offerers of airline seats to view all airline travel as one single market instead of many separate markets. Thus, they could cross-subsidize, taking losses in one corridor—where competition was keen—and making up for them in others, where competition was not so keen. They could take advantage of scale economies in their own operations.

The CRS, however, was of key importance because it gave buyers such "perfect information" in the now singular marketplace that they could shop for the absolutely lowest price. Because the artificial barriers that created many separate airline seat markets were gone, buyers were buying into a universal/homogeneous airline seat capacity. Buyers could plunder airline offers by very easily (often with the assistance of clever travel agents) getting the lowest possible prices for this capacity. In such a buyers' market, only the least costly airline provider would be able to make a profit (or lose the least amount of money). As Robert Crandall, CEO of American Airlines, puts it, "In the airline industry, you are at the mercy of your dumbest competitor."

Consolidation, as is happening with airlines, is occurring in other industries, and electronic trading systems are driving the process.

- Electronic securities markets—such as the NASDAQ, Instinet, Dealing 2000, and Globex—are changing the economics of the securities business. The City of London and Wall Street have been consolidating for the past five years.

- EDI and EDI-like systems are changing the face of distribution. Wal-Mart, for example, is bypassing food brokers and dealing directly with food manufacturers by using EDI.

- Magazine subscription agenting, pharmaceutical distribution, video distribution, and general merchandise wholesaling are experiencing a shrinkage of competitors in their respective niches due to the improved communication/information that electronic trading provides.
- Customs brokers and freight forwarders are facing obliteration by the electronic entry programs of U.S. Customs.

Intermediaries are being eliminated, competitive markets are contracting, and value chains are being re-engineered. Only the lowest cost providers are able to compete. Interorganizational, electronic systems that facilitate commercial exchange ("electronic commerce") are changing the economics of industry organization.

Exhibit 6 lists industries that are approaching a marketplace meltdown, where the number of sellers in the market is rapidly shrinking to one. Electronic commerce systems are allowing this consolidation to happen.

Yes, information systems are "competitive weapons." They have helped reduce competition in the airline industry. In fact, in the airline industry they have helped to eliminate competition absolutely: there are almost no more competitors left.

Exhibit 6

The Electronic Commerce Hit List

Industries that Will Be Consolidated by Electronic Marketplaces

Industry	Hit Completed
Airlines	Now
Securities	Now
Banking	In 5-8 years*
Distribution	In 2-5 years
Pharmaceuticals	In 2-5 years
Books and Magazines	In 2-5 years
Videos**	In 2-5 years
Semiconductors & Electronic Components	In 2-5 years
Mass Merchandise	In 5-7 years
Transportation Services	In 2-5 years

*Highly contingent on regulatory environment

**Depends on success of pay-per-view TV Source: INPUT

Market Meltdown

At what point do electronic systems cause meltdown of the marketplace and irreversible consolidation, implosion, and collapse?

Many factors play a role in such change. The percentage of buys that are electronically weighted by the capital outlays required to deliver a market offering, is one. An easy measure to take is to determine how much money (in fees based on transactions) electronic commerce systems are generating in comparison to how much money the overall trading community is generating.

Continued on next page

Airlines . . from page 5

INPUT has derived the following estimates and finds that as might be expected, the airline industry has perhaps the greatest amount of revenues, as a percentage of overall revenues, coming from electronic commerce systems. Exhibit 7 lists some of the measures for industries.

Exhibit 7

EC Expenditures as Percent of Total Industry Revenues

Trading Community	Electronic Commerce Expenditures versus Output ($)	Ratio (percent)
Travel and tourism	3.6 billion/312.6 billion*	1.1
Grocery	1.8 billion/540 billion**	0.3
Transportation (freight)	260 million/122 million**	0.2
Health care	800 million/676 billion**	0.1

*INPUT, U.S. Department of Commerce (includes more than just CRS revenues)
**Other INPUT Electronic Commerce reports

Source: INPUT

INPUT suggests that when the revenues derived from the operation of electronic commerce systems begin to surpass one percent of total industry revenues, beware! The industry is about to implode. Efficient markets obliterate everyone.

It is interesting to note that by this measure health care is one of the least efficient market places.

Making Markets

Given that electronic trading systems help consolidate an industry, what are users and vendors to do to make money? Users (for example, American Airlines) threaten to undermine their own competitive positions. American is not making money on airline seats.

Vendors of electronic commerce systems (computer reservation systems, EDI systems, etc.) face the catch-22 of putting their customer base out of business. By making the industrywide function of their customer base—for instance, all the pharmaceutical distributors in the U.S.—more efficient, the systems vendor ends up eliminating many of those distributors, its customers. In other words, by helping to clear the exchange between manufacturer and retailer (the role of distribution), EDI vendors help to minimize the role of distribution. EDI accomplishes, through electronically routing the myriad offers of sellers and the myriad requests of buyers, what formerly had been the tasks of a large industry employing hundreds of thousands of people, buildings and equipment.

The key question is, what exactly is a profitable product and therefore the market to be in? American Airlines isn't making profits on airline seats but it is making profits on Sabre (although even this is debatable at this time).

The marketplace for semiconductors and components may be cutthroat, but the systems providers who take transaction fees from every trade are making money.

A possible rule, therefore, is that after a certain critical mass has been attained—when trades in a marketplace are predominantly electronic—the money to be made isn't in the exchange of the market's product. The money to be made is in providing the market itself. Not the product, but the market for the product is where money is to be made.

Thus, the rule is, for vendor and user alike: be a market maker. To be a market maker, stipulate what it is that can be traded and how it can be traded. Delimit the possible actions that buyers and sellers can take in this marketplace. Be the agent that allows others to buy and sell. Buyers and sellers can make money on the market, but the market maker certainly makes money as the others make money. For more details on market makers, see INPUT's forthcoming report, *U.S. Electronic Data Interchange Market Report, 1992-1997.*

If a Marketplace Is a Forum for Learning, Be an Educator

Electronics makes for such absolute market efficiency that competition is no longer a viable condition of the marketplace. Schumpeter's warning/dictum may prove to be true: capitalism's success is its own undoing.

"Efficiency" has been the great virtue of free-market economic systems. Efficiency is a matter of buyers knowing prices of things and where things can be bought for the best bargains. It is a matter of sellers and potential sellers knowing where opportunities exist for their goods and services (more generally, their competencies) to command prices greater than production costs and bring them profits.

Electronic information systems that facilitate commercial exchanges (such as computer reservation systems, EDI, data bases, etc.) make buyers and sellers (and potential buyers and sellers) more knowledgeable. Such systems facilitate their respective searches for opportunities. Such systems effectively gather and present, in a single place or terminal, all the relevant indicators for making a buy/sell decision.

Being more knowledgeable means that sellers are able to identify and develop (through conversation with other parties) profit-making opportunities for a certain kind of competence. Ease of identifying and developing these profit opportunities results in many entrepreneurs pursuing these opportunities. Eventually, the opportunity of making money on one kind of competence evaporates when there are too many providers of it.

But there are still profits to be made in the industry. Profit opportunities move from the delivery of the product, to the delivery of the marketplace. In a sense, it is providing market participants with a better way of conducting their search and exchange (their educational) processes. This kind of "educational service" becomes the area where the value adding takes place. ■

Business Consultants View EDI as One of Many Tools

Price Waterhouse Combines EDI and Re-engineering Practices

Two of the world's premiere business consulting firms, Price Waterhouse and Andersen Consulting, are positioning their EDI expertise to augment their business re-engineering practices. They do not see EDI as a standalone practice. This underscores how EDI is part of a larger solution to restructure business organizations and industries.

Price Waterhouse has made the most substantial shift in orientation of the two professional services companies.

Tom Colberg, Partner and Manager of Price Waterhouse's Worldwide EDI Practice, says that he and another PW partner have created a new practice at PW. It is the combination of the EDI practice and the re-engineering practice. He said that every EDI project turned into a re-engineering project and that every re-engineering project turned into an EDI project. So they merged the two practices.

He also said that it makes much more business sense to PW to do this. The re-engineering practice generates about 20 times the revenue that the EDI practice generates. Tom says that the scope of re-engineering is much wider than EDI and therefore so is the business opportunity. He speculates that, overall, the re-engineering market is bigger than the EDI market by a factor of ten. In a few years it may be bigger by a factor of 100.

Without the explicit shift in scope of practice that PW has undertaken, Andersen Consulting also maintains that EDI is part of a larger "treatment" to business. Andersen augments its industry specialist teams with EDI experts.

According to Peter Tannenwald, Manager of the EDI and Network Solutions Practice at Andersen, the EDI consulting services at Andersen are organized according to vertical industries. Andersen consultants are organized and specialized along industry lines. Their jobs are focused on bringing efficiency to these areas; each analyst brings specific industry expertise to the job. EDI is incorporated into the solution. EDI is not a generic tool, says Mr. Tannenwald.

Also, business process re-engineering is much of what an EDI job consists of, he says. "Business process re-engineering is 50% of the problem."

Mr. Tannenwald sees a significant increase in EDI jobs, especially in health care, retail, and customs agencies in the Far East. Also, Asian governments are establishing their own VANs to help electronify their export industries.

Analysis: Price Waterhouse's expanded focus is a significant development. It underscores the fact that EDI, by itself, is not the total solution. The total solution is a reshaping of the work flow, the work practices and behaviors, the supplier/customer relationships, and the focus of management of an organization. Many information technologies and education/change programs are available to effect this kind of reshaping. EDI is just one of these technologies.

Price Waterhouse's new focus is a more intelligent way to sell EDI services than its previous standalone EDI practice. It serves as a good example to other vendors of EDI products and services, including providers of software, network services and professional consulting services.

Furthermore, the new focus gives definition to the changing identity of EDI. The perceptions of EDI users and vendors are very important to how big or small the market will be for EDI products and services. When user organizations see EDI as part of revamping business operations, then their expectations and actual realizations will correspond to one another. Unfortunately, with EDI there have been many discouraging experiences. ■

Motorola Launches Electronic Catalog for Semiconductors and Components

Targets One Million Users, Three-Billion-Dollar Cost Source

Motorola New Enterprise, a business unit of Motorola, Inc., has created INFO Enterprises, a company that provides on-line component data and other information used by engineers when designing new products. Texas Instruments Semiconductor Group joined Motorola in the venture. INFO Enterprises (Chandler, AZ) is working with other semiconductor manufacturers on plans to offer technical information throughout the INFO Enterprises network. The catalog will list component information from all manufacturers of components, not just Motorola.

Engineers in the electronics/semiconductor industry will have access to product information, specification and data sheets from multiple component suppliers. They will be able to gain access to this information without leaving their desks.

INFO Enterprises is targeting the people who use semiconductor catalogs: design engineers, quality assurance and testing personnel, and procurement staff. It estimates the potential number of users to be around one million.

Initially, the catalog will provide only product information. Perhaps later users will be able to order products electronically.

The catalog service will be made available in 1993 and will be accessible via the Internet. Motorola will maintain the data base in a distributed fashion at multiple nodes across the country. Users will have the option of dialing in asynchronously (for ad hoc queries) or via dedicated lines (typically, for larger organizations that want the information at hand in their engineering departments all the time).

INFO Enterprises will collect product data sheets from manufacturers and put them into electronic format using the Standard Graphical Markup Language, a standard for text and graphic representation. Later, representations that allow users to interact with the data will be incorporated.

According to the CAD Framework Initiative (a group of industry representatives developing standards for CAD software and electronic representation of components), manufacturers spend three billion dollars annually to

Continued on next page

Motorola

. . from page 9

obtain, maintain and update product data (usually through the publication of unwieldy paper catalogs). INFO Enterprises is attempting to minimize this expense as well as shorten the time lag between when a new product is available and when the data specification on the new product is available.

INFO Enterprises plans to charge manufacturers fixed service fees and charge users variable fees based on information content.

The Motorola New Enterprise business unit, the sole equity holder of INFO Enterprises, was established a few years ago to fund new businesses that will foster the growth of Motorola's key businesses in electronic components, communications, computers, and cellular telephones.

Analysis: Motorola's product catalog service adds to the burgeoning list of electronic product catalogs. Electronic product catalogs offer vendors a very concrete, lucrative opportunity and are a much-needed service in more and more industries. Already, electronic product catalogs are produced for the following industries: apparel/retail (UPC catalogs), automotive parts retailing, consumer hardware products, books (Pubnet, Baker & Taylor, Library of Congress), construction, natural gas, transportation (tariff data bases, Spec 2000), education (course catalogs), media (rates and data for magazines), and banking (the NACHA directory of banks' EFT capabilities). Many of these have been created specifically to facilitate EDI-based trading.

Product catalogs are essential to a business environment in which commerce is conducted electronically. First, they provide the necessary identification of the product that will be bought and sold. The systems that process the buying and selling communication flow require codes that unambiguously specify what is being exchanged. The UPC catalog, for example, is not so much a forum in which merchandise managers at department stores can pick and choose products, as a systems and network maintenance tool. It allows MIS managers at stores to update their point-of-sale systems (with product look-up tables) to make sure bar codes, merchandise items, and prices are kept in synchronization. Electronic book catalogs provide the numeric code that is inserted in the electronic purchase order. This way, the bookstore buyer clearly communicates his/her request to the publisher's sales representative. Product catalogs, in this respect, allow the community of buyers and sellers to maintain their electronic systems.

Second, product catalogs delivered electronically (instead of by paper) take advantage of the benefits of doing business electronically: faster turnaround, more direct connection to end users, less chance for errors, less expense in clerical procedures, etc. Electronic catalogs are a logical component of electronic commerce.

Electronic directories have the same role as catalogs. Instead of identifying things, directories identify people, companies or generalized services on a network. Electronic directories are more controversial than product catalogs because invasion of privacy and security is a potential problem with directories. Electronic directories also have a huge potential in the electronic commerce environment (possibly larger than electronic product catalogs), but will be slower to become available than product catalogs due to legal considerations. To date, the most distinctive generally available electronic directories are: electronic white and yellow pages, MarketPlace Information Corp.'s CD ROM business directory, and Performance Systems International's X.500 prototype service for the Internet.

For more background on electronic catalogs and directories, see INPUT's recently published report, *Electronic Commerce in the Media Industry.*

Source: Jasper Norris, Founder, INFO Enterprises, 602-545-6340. ■

News Bits

Sears Communications Company has allied with INFONET and Philips Communications & Processing Services International, linking these two commercial networks with its own to expand its SNA and EDI data communications services. INFONET (El Segundo, CA) is an international value-added network owned by a consortium of telephone companies, including MCI. Philips Communications is a wholly owned subsidiary of Philips Electronics N.V. ■

Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

August 25-27, Cobo Conference Center, Detroit, MI, Auto-Tech, Automotive Industry Action Group, 313-358-9746.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530; fax: 38-64-214-458).

September 15-16, Hyatt Regency Bethesda, Washington, D.C., Third Annual EDI for Government Conference and Expo, USPDI, Inc., 301-445-4400.

October 4-6, San Francisco, CA, INPUT's Annual Client Conference, INPUT, 415-961-3300.

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

October 11-14, Convention Center, San Antonio, TX, Annual Conference, Council of Logistics Management, 708-574-0985.

October 13-14, San Jose Fairmont Hotel, San Jose, CA, Aerospace & Electronics 2000, Aerospace Industries Association/DoD/EIDX, 214-475-1838.

October 26-28, San Francisco, CA, Electronic Messaging '92, Electronic Mail Association, 703-875-8620.

1993, January 10-13, Hyatt Regency, San Antonio, TX, Financial EDI Conference, Treasury Management Association and National Automated Clearinghouse Association, 301-907-2862.

1993, March 14-17, San Diego Marriott Hotel and Marina, San Diego, CA, Annual Conference, National Automated Clearinghouse Association, 703-742-9190. ■

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INPUT is a worldwide consulting and market research firm uniquely focused on the information technology services and software markets. Executives in many technically advanced companies in North America, Europe, and Japan rely on INPUT for data, objective analysis, and insightful opinions to support their business plans, market assessments, and technology directions. By leveraging INPUT's considerable knowledge and expertise, clients make informed decisions more quickly, and benefit by saving on the cost of internal research.

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EDI Market to Surpass $1 Billion by 1997; Problems Remain Nevertheless

INPUT has just completed its annual survey and analysis of the U.S. EDI market. Below are highlights of some of the report's findings. In general, INPUT finds the outlook for EDI mixed:

- Implementation of EDI continues, and user expenditures on EDI software and services should surpass $1 billion in five years. At that time, INPUT estimates, there could be 50,000 to 150,000 organizations using EDI in the U.S.
- Integration of EDI within and among organizations continues to impede the growth of EDI-based business. This integration problem requires, in INPUT's opinion, a new architecture, new market packaging, and a new business process re-engineering strategy for EDI.

Following is a brief elaboration on these points. For more detail, please call any INPUT office and ask about the report, *The U.S. Electronic Data Interchange Market—1992-1997.*

Billion-Dollar Market in 1997

INPUT finds the market for EDI software and services continuing to grow at a rate of 20% to

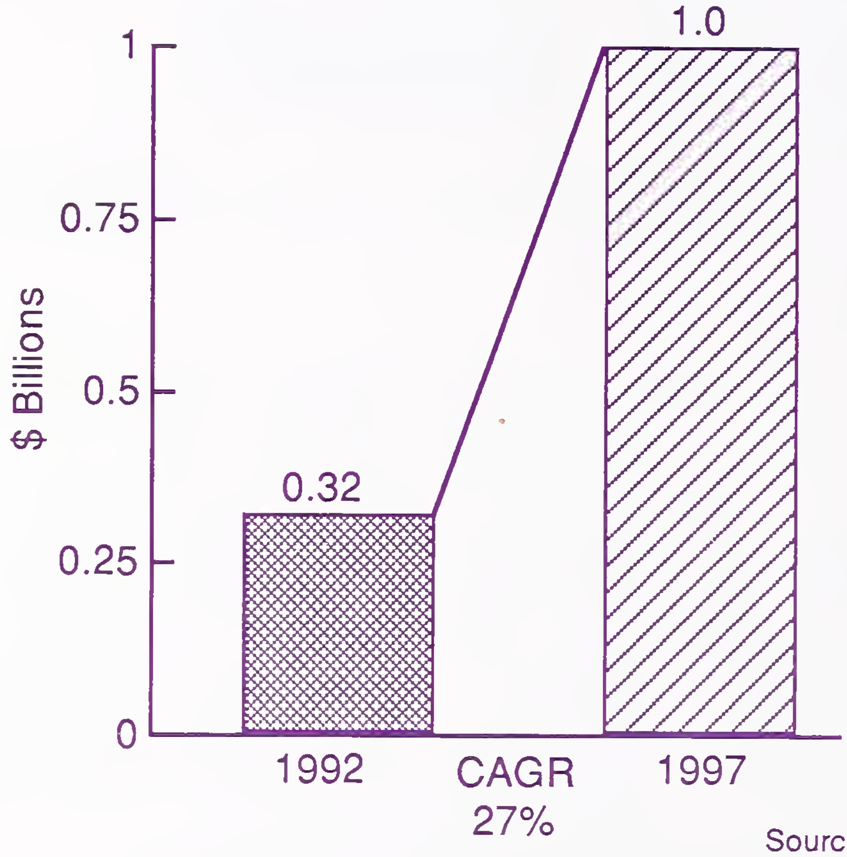
Continued on next page

EDI Market *.. from page 1*

25% per year. INPUT expects it to become a one billion-dollar market by 1997; it will grow at a compound annual growth rate of 27% between now and then.
Exhibit 1 depicts this growth graphically.

Exhibit 1

EDI Market Growth
1992-1997



Source: INPUT

The most significant developments since INPUT's last forecast are:

- The rapid year-to-year (1991-1992) growth of software, particularly in the midrange market
- The introduction of the "server" platform market
- The anticipated surpassing of the billion-dollar mark for the entire EDI market in 1997 (although this achievement is contingent on a number of factors, the most significant being what the definitive characteristics of EDI products will be in 1997)
- The inclusion of the "conference" expenditures component of the market

Explosive Growth in EDI Software

The software segment of the EDI market registered the greatest growth over the period 1991 to 1992. INPUT identifies two factors that account for this:

- Post-recession spending—Pent-up demand for new EDI software is finally being released due to a more favorable business climate.
- Vendor "churn"—Users are more frequently replacing/upgrading their original EDI software than they have in the past.

Just in the last year—from 1991 to 1992—there has been tremendous growth in the market for EDI translation software that runs on midrange platforms (typically, AS/400s, and the System 3X class of machines).

The growth in the midrange market, INPUT believes, corresponds to more users upgrading their EDI capacities. After a certain threshold of trading partners has been attained with whom EDI is used as a communication channel, the typical EDI user will replace its translation software. In this year's survey of 134 experienced EDI users, more than half (58%) reported that they had replaced their software in this manner.

Last year's introduction of UNIX-based EDI software that is distributable in a client/server fashion fits into this trend of upgrading by users. INPUT expects the UNIX-client/server architecture to be a successful market offering, bringing satisfaction to EDI users, and will grow rapidly from its current relatively small market niche.

Expansion of the Midrange Market

The expansion of the midrange market for EDI software should be viewed along with the solid growth of the EDI micro software market. Growth in both markets, INPUT believes, reflects (1) the growing trend in downsizing and client/server architectures (2) the relatively saturated mainframe EDI software markets, and (3) the ongoing growth in the number of EDI users (when a company first takes the plunge into EDI, it does so on a microcomputer).

EDI server software is typically written for a UNIX operating system and therefore is hardware independent. EDI server software on the market today runs on high-end PCs to mainframes. So the new category "server" will, by definition, subtract revenues that would previously have been assigned under the other categories of micro, midrange, and mainframe.

American Business Computer (ABC) and **St. Paul Software** are the two leading EDI server providers today. GEIS is a third because it resells ABC's offering. The market for EDI server software at this point essentially consists of ABC and St. Paul, as shown in Exhibit 2.

The growth in the smaller platform markets shouldn't reduce the mainframe markets. Sales of mainframe EDI software will continue to grow and there is a certain (and potentially expanding) proportion of EDI users who upsize their EDI platforms from PCs or AS/400s to mainframes.

Exhibit 2

The EDI Server Software Market, 1992

Server
ABC (EDI Excel)
St. Paul Software (Datatran)
GEIS
Total = 2.93*

*Revenues broken out in detail in The U.S. Electronic Data Interchange Market, 1992-1997.

Source: INPUT

Vendor "Churn": Users Replacing EDI Software

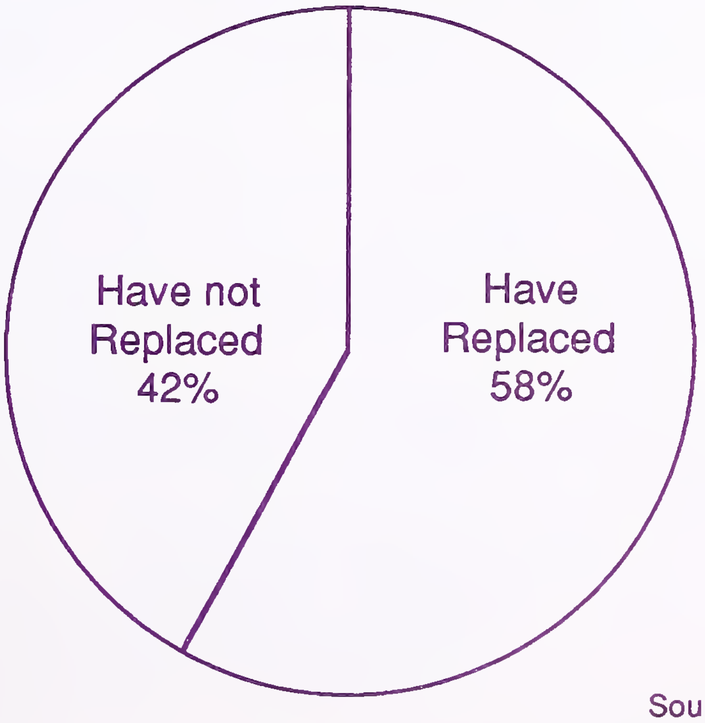
In this year's survey, INPUT asked users if they had replaced their original EDI software and value-added networks. INPUT found that 58% of the users interviewed had replaced their EDI translation software at least once since they first began conducting EDI. Only 32% had switched or added a second value-added network service.

Exhibit 3 indicates the proportion of EDI users who have replaced their original EDI software at least once.

Continued on next page

Exhibit 3

EDI Users Who Have Replaced Original EDI Software



Source: INPUT

EDI Market

..from page 3

This replacement percentage indicates that there is a significant EDI aftermarket.

The almost unanimous response to why users switched was that they were seeking performance enhancements.

INPUT confirmed this rationale by discovering in the data that the average number of EDI trading partners of the "software replacer" was higher than that of users who had not replaced software. In other words, after attaining a certain number of trading partners with which it conducts business via EDI, the typical EDI user will upgrade its EDI software to accommodate the increased throughput requirements.

Based on the user survey, INPUT estimates that when the number of trading partners exceeds 100 to 120, the user company will begin considering upgrading its EDI translation software. Exhibit 4 indicates the average number of trading partners of users who have and have not replaced EDI software, and the estimated threshold at which the upgrade may occur.

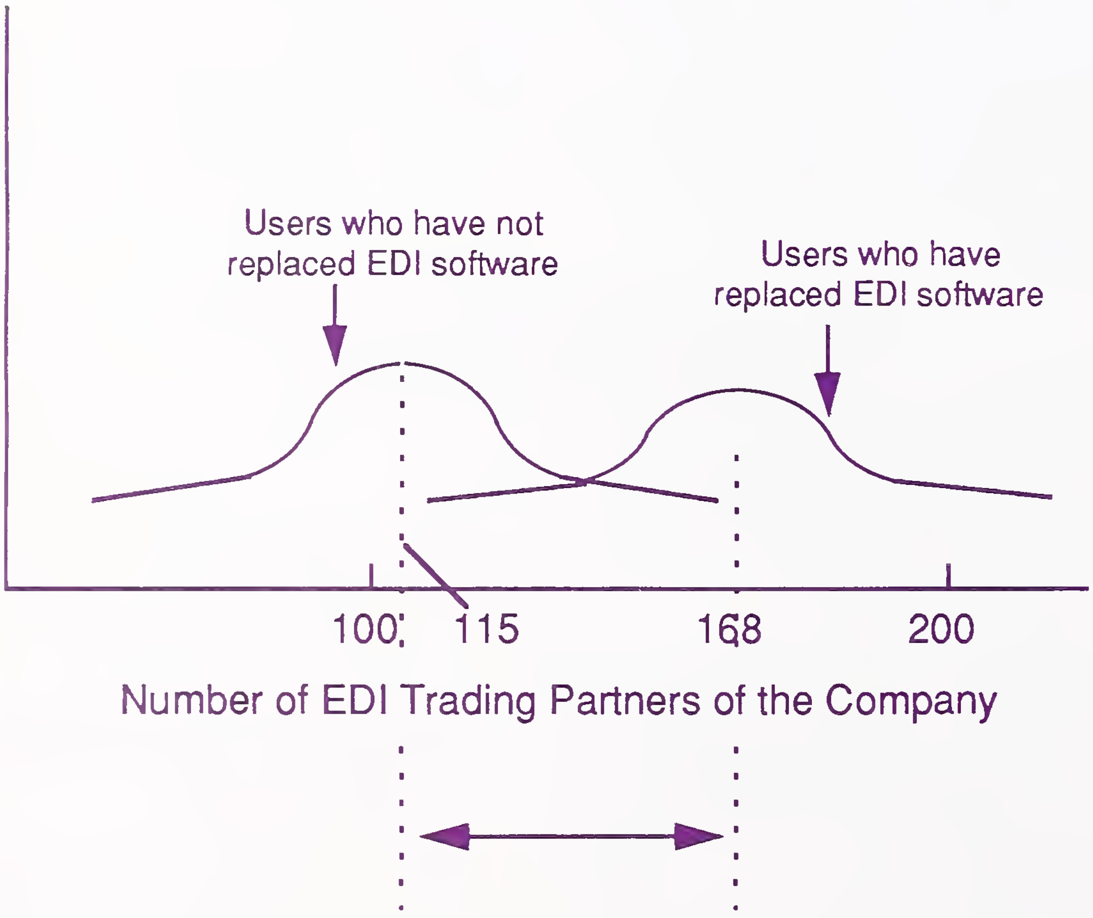
According to user responses, the average number of trading partners of companies that had not replaced their EDI software was 115. The average number of trading partners of companies that had replaced their EDI software was 168.

INPUT considers these thresholds of trading partners to be high. INPUT knows from anecdotal evidence that users replace EDI software after only 15 or fewer of their trading partners are up and running on EDI. Though the exact thresholds may be unimportant, the point is that if a user's EDI program is increasing the number of trading partners, the typical EDI user will sooner or later wholly replace its EDI software.

The vendor churn associated with VAN usage is different than with EDI software. Usually the user doesn't replace a VAN with another VAN, it simply adds another VAN as a service provider. The reason for this is that the user establishes an EDI trading relationship with a company that uses the services of the other VAN.

Exhibit 4

Point At Which Users Upgrade EDI Software



Source: INPUT

EDI: A New Definition, A New Market

Exactly what constitutes EDI technology is in for some major definitional changes over the next few years. Real-time architectures, hybrid EDI systems (employing voice response, facsimile, and other messaging tools), auxilliary services to EDI (product catalogs and directories, for example), and many other developments are changing the defining characteristics of EDI technology. Change the defining characteristics of a product—include new, heretofore excluded features and/or exclude heretofore included features—and you will change the size of its market.

Thus, to say EDI will be a billion-dollar market in 1997 is a statement subject to consideration of a host of interpretive and debatable issues. However, INPUT's billion-dollar estimate assumes a very narrow definition of EDI. It assumes that systems conforming to this narrow definition will continue to be implemented in 1997. Both assumptions are conservative.

If anything, the EDI market will be larger than one billion dollars in 1997; or EDI as we know it today won't exist as a distinct technology. It will be part of a larger market category that is more coherently identified as "electronic commerce."

Scope of EDI Professional Services to Expand

INPUT expects that consulting and systems integration professional services for EDI will be one of the most rapidly expanding segments of the EDI market over the next five years. Professional services will increasingly be required as workflow is restructured within companies as well as within trading communities of companies.

Part of the growth in the professional services segment, however, will be due to a redefinition of what constitutes "EDI consulting." Re-engineering business processes and workflow will be intermixed with EDI projects. An EDI project in 1997 will be as much of a re-engineering project as it is an EDI project. This expansion of the scope of EDI consulting, because it is more inclusive, will cause the market for EDI consulting services to appear larger than it would if a narrow definition of EDI were used.

EDI Needs New Implementing/ Marketing Approaches

Despite the relatively solid growth for EDI products and services, the EDI market faces some challenges.

The first challenge is competition among vendors. Entry by software providers in the mainframe and midrange EDI software markets will further erode profit margins in those arenas. The network services market, already subject to falling prices over the past couple of years, will continue to be a price-war battleground, especially as some Regional Bell Operating Companies ramp up their EDI offerings.

The only way network providers can compete here is to move away from offering basic transport services and offer community-wide system support (such as electronic information services, trading partner implementation programs, E-mail, and others).

A greater challenge to EDI than competition is the way it is marketed by vendors and understood by users. Today, EDI is a rigidly defined technology looking for a buyer. To be more widely used, EDI must be more flexible (to accommodate many kinds of business relationships and processes) and it must be sold as part of a larger solution.

Buyers of EDI typically come to it because it offers the possibility of streamlining their operations. The most satisfied EDI users, INPUT's survey discovered, aren't implementing EDI *per se*. Rather, they are improving their operational efficiency. EDI should be packaged in a solution that

Continued on next page

EDI Market *. . from page 5*

addresses this request for streamlining. Today, however, it is largely sold as a standalone technology.

Nevertheless, some vendors are shifting the way they position their products to address this challenge. Making alliances with many other vendors, INPUT believes, is the right approach to take in selling EDI.

A third, and perhaps the greatest, challenge facing EDI is integration. Integration is difficult on two levels: for the single EDI user to integrate its internal applications with EDI, and for the trading community of users to integrate their business workflows with each other through EDI.

The reason this is challenging is that so much has to be coordinated and no single person or group of persons can foresee all contingencies. The rigidity of the EDI architecture prevents the user from responding to changing business conditions.

INPUT recommends that users and vendors alike take the position of being "market makers" when it comes to EDI. That is, they should position themselves with their customers and suppliers in such a way that it is in the interest of all parties to build and use an EDI infrastructure. Effectively implementing EDI requires vendors and users to incrementally build an EDI infrastructure and share the investment costs with as many parties as possible.

General Recommendation: Be a Market Maker

Because EDI is a "group sell" and requires acceptance by and participation of many parties, in order to successfully build an EDI system the EDI initiator (a user, vendor, trade association, government body, or combination thereof) should position itself as a "market maker." A market maker renders participation in the building of the project—in this case, an EDI system—attractive to all relevant parties in a given commercial context.

Market makers set up a situation in which people can make money. The market maker sets the rules of the game so that it is attractive to play it. This may mean giving away software, network services, etc. These giveaways pay for themselves in the long run because more people end up doing business with the market maker.

Market makers *include*, they do not *exclude*. Proprietary systems and strategies limit the number of people who can play in the market maker's game. This limits the amount of money that can be generated in the long run. Proprietary systems and exclusion have immediate attractiveness in that the provider of the marketplace system has a monopoly and can control and charge for it. Not only is the current EDI marketplace switching from proprietary to open systems, but history provides example after example of closed-system failures (the Soviet Union, for example).

Market makers make it simple. Complexity discourages people from wanting to participate. To be successful at making the market, you must make it easy for people to enter and participate. Simplicity requires easy-to-integrate EDI software and a small list of guidelines for EDI use in the trading community.

Users as Market Makers

If you are a user of EDI, be a market maker by:

- Helping your trading partners do EDI: provide an incentive or otherwise make it attractive for them to trade with you electronically. Set it up so that everyone makes money by trading with you.
- Making sure that every group within your organization sees a positive benefit of participating in implementing EDI throughout the company.

- Negotiating/attaining discounted prices with EDI vendors for software and services. Do this on your own or with/through other trading partners in your trading community. Perhaps enlist the support of trade associations.

The user as a market maker is typically a hub company. The company helps its trading partners get up and running with EDI. Often the hub company subsidizes the cost of software, network services, company education, and other expenses associated with implementing EDI.

Transportation companies have taken this route, particularly with their customers, giving their customers EDI software so that the customer can electronically send bills of lading.

Retailers **Sears** and **Wal-Mart** have also adopted this strategy, giving their trading partners inexpensive network transmission services and, in the case of Sears, inexpensive EDI software. Wal-Mart requires its suppliers to buy their own EDI software, but has negotiated a wholesale price for them to purchase their software from **TSI International**.

User market makers should work with EDI vendors to help bring up their trading community, as Wal-Mart has done with TSI or as trade associations (e.g., the National Wholesale Druggists' Association; American Publishers Association) are doing with **GE Information Services, Sterling Software** and **IBM**. The objective is for the user organization/representative to contract with the vendor to help it bring electronic trading to its network of commercial relationships.

Vendors as Market Makers

If you are a vendor of EDI or other information software/ services, be a market maker by:

- Helping EDI users implement EDI across the trading community. You can charge for this, but be prepared to bear up-front costs in return for annuity-type revenue streams in the future. Ideally, you want to capture a market in a given niche.

- Organizing a series of relationships with a multitude of IS vendors (applications software companies, third-party developers, vertical market specialists, general professional services firms, systems integrators) to offer an integrated solution to a particular market niche/ industry.

The trading partner implementation program is the best strategic marketing approach that a vendor can take with EDI. The objective is to get as many companies in a trading community conducting business via EDI as possible. The vendor (or alliance of several vendors) helps a large hub company bring up all its suppliers or customers in a project management-type approach. This also works with generalized trading communities that are not necessarily grouped around a single hub company, such as shipping ports.

This kind of market maker offering by a vendor will increasingly require alliances among vendors. No single vendor has all the expertise and competence required to make the infrastructure for a market. Network services, software, technical implementation services, maintenance and customer support services, application integration, business process re-engineering consulting at the company and community levels, and electronic information services (particularly community product catalogs and directories—see INPUT's report, *Electronic Commerce in the Media Industry*) are several of the kinds of work and offerings that are necessary to make an electronic marketplace. (For more information on EDI vendor alliances, see INPUT's forthcoming report, *EDI Vendor Profiles and Analysis*.) ■

The U.S. Electronic Data Interchange Market
1992-1997

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U.S./European Standards Groups to Compile Enterprise Integration Models

Cooperative efforts between the United States and the European Community (EC) are under way to develop a consensus on how to model enterprises and trading communities for the purpose of integrating them with information technologies.

The goal is not so much to make some grand data description syntax or model as to simply list how the many different initiatives that exist today that support integration might relate to each other. These initiatives include Standard for Exchange of Product Data (STEP), Electronic Data Interchange (EDI), Open System Interconnection (OSI), Computer-Aided Acquisition and Logistic Support (CALS), Computer-Integrated Manufacturing Open Systems Architecture (CIMOSA), etc. An immediate objective of the group is to provide a "clearinghouse" for information on how to model enterprises.

Work in specific areas is taking place without any overarching coordination or cross-communication. What this initiative is trying to do is to bring together these widely spread groups.

The efforts are largely driven by the United States Air Force Manufacturing Technology Directorate (the ManTech initiative) and the European Strategic Programme for Research and Development in Information Technologies (ESPRIT). However, several working groups, corporate research consortia and national standards bodies are involved in the efforts, which are focusing principally on integrating various computer-integrated manufacturing (CIM) frameworks. From the CIM focus, the participants want to develop general frameworks for modelling and integrating all kinds of activities and organizations.

The groups are aiming to compile a list of modeling tools, frameworks, computer syntaxes, standards, and systems integration methodologies and make the list available to the private sector and government.

The European Computer-Integrated Manufacturing group AMICE and the National Institute for Standards and Technology (NIST) are cosponsoring this initiative. NIST is working with the Austin-based research consortium, MCC, to develop principles of enterprise integration.

ManTech is a technology agenda to develop electronic systems that coordinate the design, deployment, and maintenance of complex weapons systems.

MCC wants to establish enterprise integration as a government technology agenda/focus similar to CALS and CIMS.

Enterprise integration analyzes the relationships and interactions between people and systems, between people, and between companies. Useful information will be a theory of organization that will establish "integration requirements" for accomplishing certain kinds of work. Another goal of this research is to develop metrics to measure the effectiveness of a certain system/architecture/business practice in accomplishing a certain goal.

Source: Bill Stokesbury, MCC, 512-338-3785 ■

News Bits

St. Paul Software formed an alliance with **Control Data Asia**, a subsidiary of Ceridian (formerly Control Data Corporation). Control Data Asia, with a strong systems integration business in the mini-dragons, will remarket and provide technical support in Asia for St. Paul Software's products.

The **Health Industry Business Communications Council** (HIBCC) has released a set of EDI guidelines for the health industry. The guidelines, available from **Washington Publishing Corporation** (800-334-4912), specify all the data formats for transactions between health care providers and suppliers, including financial transactions and transactions that support contract management activities among groups, individual hospitals, manufacturers, and distributors.

• •

Calendar

Note: The annual EDIA conference, traditionally held in December, has moved to October.

August 25-27, Cobo Conference Center, Detroit, MI, Auto-Tech, Automotive Industry Action Group, 313-358-9746.

September 3-5, University of Maribor, Bled, Slovenia, Yugoslavia, Interorganizational Systems in the Global Environment, University of Maribor, (tel: 38-64-211-530;
fax: 38-64-214-458).

* September 14-17, Bethesda Hyatt Regency, Washington, D.C., EDI for Government, EDI World/DISA, 301-445-4405.

September 15-16, Hyatt Regency Bethesda, Washington, D.C., Third Annual EDI for Government Conference and Expo, USPDI, Inc., 301-445-4400.

October 4-6, San Francisco, CA, INPUT's Annual Client Conference, INPUT, 415-961-3300.

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

October 11-14, Convention Center, San Antonio, TX, Annual Conference, Council of Logistics Management, 708-574-0985.

October 13-14, San Jose Fairmont Hotel, San Jose, CA, Aerospace & Electronics 2000, Aerospace Industries Association/DoD/EIDX, 214-475-1838.

October 26-28, San Francisco, CA, Electronic Messaging '92, Electronic Mail Association, 703-875-8620.

1993, January 10-13, Hyatt Regency, San Antonio, TX, Financial EDI Conference, Treasury Management Association and National Automated Clearinghouse Association, 301-907-2862.

* (Asterisk indicates new entry since last month)

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Networks Reorganize to Capitalize on Electronic Commerce Potential

Recent events demonstrate that the race is intensifying among EDI and electronic commerce network service providers to capture the coveted, yet still emerging marketplace for network-facilitated commercial business transactions. Reorganizations, product introductions, acquisitions, and highly competitive service agreements are some of the actions that networks have recently taken in pursuing this vast yet inchoate market potential.

Electronically networking businesses is obviously a huge new service arena. There are many questions: how does a vendor approach this market, how does it package the offering, how does it structure the deal with clients? Indeed, who *are* the clients—individual corporations, divisions within a corporation, or communities of corporations (such as the book publishing/retail industry, shipping ports, pharmaceutical/health care/insurance providers, the grocery industry)?

The market for electronic commerce services is not something that already exists. It has to be constituted by the service provider. It is analogous to the market for the **Sony** Walkman prior to the Walkman's debut. The vendor creates the market by showing the prospective buyer what new opportunities for action, personal/corporate identity, organization, etc. are possible.

Large EDI service players are positioning themselves to be more capable in participating in the still-forming electronic commerce service market. In this issue, INPUT examines in detail the following service provider movements.

Continued on next page

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Reorganize . . from page 1

IBM and Sears Merge Networks — "Advantis" Is Tool for IBM's Outsourcing Business

In a newly created joint venture, the **IBM Information Network** and the data processing body (including data network) of **Sears, Roebuck & Company** have merged and will be operated as a single company called **Advantis**. The general manager of the IBM Information Network, **Syd Heaton**, is now the CEO and Chairman of the new company, which will be headquartered in the Chicago suburb of Schaumburg, IL.

Although Advantis will be jointly owned by IBM and Sears, IBM will own the majority interest. IBM's outsourcing division, **Integrated Systems Solution Corporation**, created last year, is the direct IBM shareholder in the new venture. IBM is positioning the combined networks as a central vehicle to commercially provide information systems operations services to corporate clients. Although unannounced, Sears, Roebuck will undoubtedly have IBM manage all of its data processing functions.

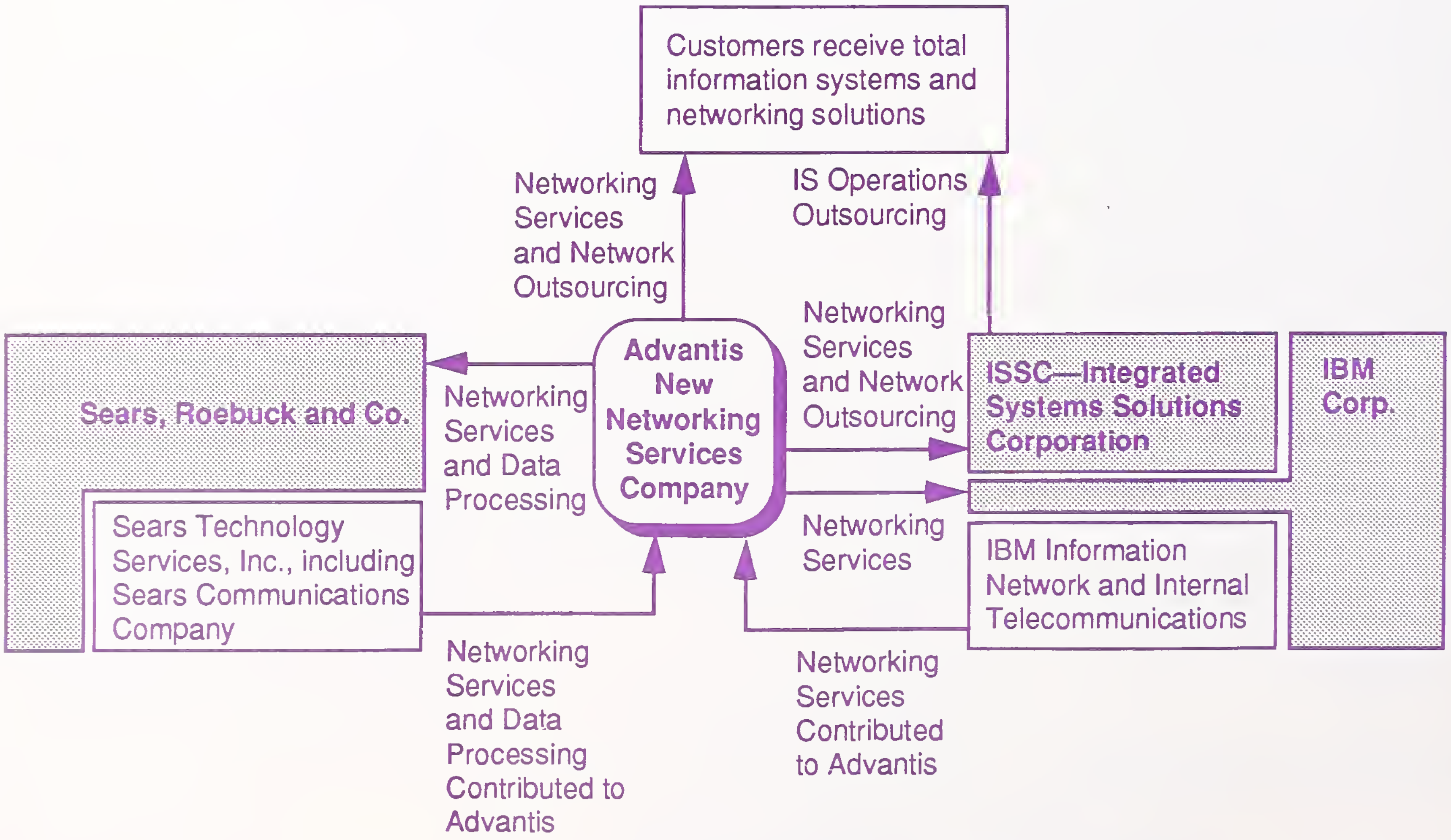
All 1,500 Sears Technology Service employees will join Advantis, as will a similar number of IBM employees from its Networking Systems Services.

Exhibit 1 shows the general structure of Advantis.

Combining the networks will bring together many network

Exhibit 1

Advantis Structure


Customers receive total information systems and networking solutions
Networking Services and Network Outsourcing
IS Operations Outsourcing
Networking Services and Network Outsourcing
Sears, Roebuck and Co.
Networking Services and Data Processing
Advantis New Networking Services Company
ISSC—Integrated Systems Solutions Corporation
IBM Corp.
Sears Technology Services, Inc., including Sears Communications Company
Networking Services
IBM Information Network and Internal Telecommunications
Networking Services and Data Processing Contributed to Advantis
Networking Services Contributed to Advantis

service synergies and complementary groups of industries. The Sears network provides E-mail, EDI, credit card transaction processing, bank-to-bank EFT (ACH), and data communication services for its many subsidiary businesses (in retailing, insurance, real estate, and securities brokering) as well as commercially (in the EDI, health care, and ACH/banking areas). The IBM network likewise provides E-mail, EDI and data communication services for other divisions of IBM (especially for its sales and service fleets) and commercial clients. In addition, IBM provides a number of electronic information services (on-line data bases).

Exhibit 2

Advantis Statistics

Customers (U.S. only)	9,000+
User IDs	1 million+
International access	92 countries
U.S. access points	550 cities
Data center sites	Schaumburg, IL Boulder, CO Columbus, OH Dallas, TX Tampa, FL White Plains, NY
Networks attached	3,000 in U.S.
T1 Circuits	2,500
Video conference centers	1,100

Source: INPUT

Both networks have international reach, are high speed (1.54 megabits per second leased line; 300 to 19,200 bits per second dial up), and are based on IBM's SNA data communication architecture/protocols.

The following is IBM's introductory statement for Advantis:

"Advantis is an information networking services company providing customers with a broad range of Electronic Marketplace® solutions. Advantis will offer private managed network and value-added network services for intra- and inter-enterprise networking solutions that enable companies to do business with their trading partners and business associates worldwide.

Private managed network services include design, development, integration and network management to give customers a competitive advantage. Value-added network services address specific business communications needs in the network, messaging and capacity services area. These services make it easier for customers to do business electronically."

Exhibit 2 gives statistics on Advantis.

Analysis: Together, the combined networks have the potential to be a powerhouse network. The capacity is high, the services are robust, and the companies and industries already connected/using the networks are diverse and represent most sectors of the economy.

Placing network services—especially EDI and electronic commerce services—at the disposal of IBM's outsourcing group is highly strategic. EDI is a unique form of outsourcing, particularly when a single network handles all EDI hook-ups for a single hub company. IBM's outsourcing and EDI business will also mutually reinforce each other, given the broad range of customers that currently use the Advantis network. For example, IBM

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IN's strong position in EDI services for the property and casualty insurance industry will be further strengthened, as IBM now outsources all the data processing for Sears' Allstate Insurance Group. New kinds of streamlining of industries will also be made possible (more on this in the September issue of the *EDI Reporter*).

The move also indicates how important the retail sector is becoming (see below). Sears is the second largest retailer in the country (just recently overtaken by Wal-Mart) and will give IBM an even stronger presence in this sector. IBM has traditionally been strong in the retail sector, particularly with its line of point-of-sale equipment. Most of the outsourcing contracts in the retail industry to date have gone either to IBM's ISSC or to Litton.

Tactically, the merger represents an especially good move on the part of Sears, which needed the cash. Although neither Sears nor IBM officials would say whether there was a cash transfer involved in the merger, it appears that IBM paid something for it. IBM owns the majority stake in the new venture.

Although the two networks consist of pure IBM equipment and architecture (and therefore will technically be easy to combine), several quarters will certainly pass before the commercial synergies of the combination can be realized.

Sterling's EDI Group Shuffles its Executive Group

The EDI Group of Sterling Software has reorganized its EDI products around more distinct and autonomous divisions (software, network services) and has committed Bill Plumb, the man who built ORDERNET, to build its international business.

The EDI Group, one of the three major divisions of Dallas-based Sterling Software, has reorganized itself in order to, according to the company, focus its marketing activities. Rather than have a single EDI group, the new organization has an EDI Software Division, the ORDERNET Services Division and an International Division. The Directions Division, which was added to the EDI Group from another part of Sterling Corporate and consists of financial/banking software, remains in place.

Warner Blow remains vice president of the EDI Group. **Bill Plumb**, formerly president of the Group, is now heading up the international division. **Paul Olson**, formerly vice president of business development, is president of ORDERNET Services. **Brad Sharp**, formerly vice president of software development in the EDI labs division and the chief of development of the Gentran product, is president of the EDI Software Division.

According to Paul Olson, new ORDERNET President, three reasons provoked the reorganization:

(1) To expand internationally, Sterling put the man who built ORDERNET in charge of building the international business.

(2) To focus and leverage Sterling's software expertise, Sterling created a separate software division.

(3) To exploit its current position in network services, Sterling is evolving into a full-service electronic commerce solution vendor.

GE Information Services Rises Within GE Corporate

This year GEIS was elevated within GE corporate to the status of a first-tier major division (one of GE's 13 major divisions), not just a minor second-tier subsidiary. GEIS President **Helene Runtagh** now reports directly to GE CEO **Jack Welch**. In addition, two other GE companies, GE Consulting and GE Federal Systems, are merging with GEIS.

GE Capital Corporation, a sister company to GE Information Services, plans to test market a GE-label credit card later this year. GEIS already provides processing services to 40 million card holders of other label cards. The GE card, although general in purpose like other credit cards, would be aimed at helping consumers purchase GE appliances.

GE's credit card foray could make for great synergies with its electronic commerce/trading services of GEIS and is similar to AT&T's credit card strategy (see *EDI Reporter*, December 1990) and now Advantis' credit card business (the Sears Discover Card).

News Leak Reveals BT North America's Global Vision

In a news leak to the **Wall Street Journal** (appearing August 18), British Telecommunications PLC has launched a multibillion-dollar plan to build a global network offering multinational corporations voice, data and video transmission services. The plan calls for the installation of 32 switching centers around the world by the year 2002. Company officials would neither confirm nor deny the news leak.

British Telecommunications is the parent of BT North America (San Jose, CA). Already, BT North America has created a single administrative network domain that spans North America and many countries in western Europe. Customers can send EDI, E-mail and other packetized transmissions within the domain under a single, uniform price schedule that does not vary according to the locations of the sending and receiving parties.

The parent company, BT, has squarely targeted the world as its market. The reach of its network for sending data is probably the most extensive of any company.

GTE and J.C. Penney Form Retail Network Service

J.C. Penney (Dallas, TX) and GTE Spacenet, a unit of GTE Corp. (Stamford, CT), have launched Advanced Retail Communications, a commercial network service aimed at 1,000 shopping malls and other retail locations throughout the U.S. The network will provide not only data transmission services (including POS and EDI), but video and audio services.

The network will handle credit authorization, inventory management, financial reporting and other applications. It will provide news, sports, and entertainment programming as well, which storekeepers can make available to shoppers. Capital Cities/ABC is part of the venture and will develop the programming materials.

Bank Vendors Eye EDI Services

National Data Corp.: Commodity-Priced EDI?

NDC (Atlanta, GA) is expanding its credit card verification and processing network capacities to include EDI and EDI/EFT payment services. It wants its bank clients to resell its recently packaged EDI network/processing service offering. NDC has full EDI messaging capabilities—not just payments. It has a strong presence in the retail sector (350,000 retail outlets are on its credit card authorization network) and with pharmacies (70% of the nation's pharmacies are on-line for claims processing services).

NDC—either through its bank customers (and it has 300 of the nation's top banks as customers) or on its own—could take a

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strong position as an EDI service provider. It would establish its core service base on the payment side of EDI (ANSI X12 820, NACHA, and BAI data formats) and branch out from there into mainstream EDI messages. If it is successful in EDI, NDC will add considerable downward pressure on EDI network service pricing. (For more information on NDC's EDI offering, see the *EDI Reporter*, January 1992 issue.)

First Financial Management Corp. Acquires TeleCheck: Will EDI Services Follow?

If National Data Corporation wants to play in the EDI market, when will its largest competitor announce its intention to play in EDI as well? First Financial Management Corp. (FFMC—based in Atlanta, GA) is the largest credit card processing service company in the U.S. With 1991 revenues of $1.2 billion, it dwarfs National Data Corporation's $230 million (in 1991). FFMC has many lines of business in addition to credit card processing: medical insurance claims processing, data image services, operation of several ATM networks, turnkey systems for retailers, and it owns a bank (Georgia Federal Bank).

Through its subsidiary, NaBANCO, FFMC provides third-party credit card authorization, processing, and settlement services to approximately 98,000 merchant customers at over 200,000 locations throughout the U.S. and the Caribbean.

FFMC's MicroBilt subsidiary builds retail turnkey systems, including point-of-sale systems, ATMs, credit verification, and other systems/applications that include communications between the retail outlet and a central office.

FFMC has grown rapidly through acquisition. Since 1983, it has acquired 54 companies representing close to $1 billion in revenue. Just recently, it acquired one of the nation's largest check authorization companies, **TeleCheck Services, Inc.** (Denver, CO) and its principal franchisee, **Payment Services Company** (Houston, TX). These two companies have a combined revenue of $105 million. FFMC bought them for $159 million. TeleCheck was a wholly owned subsidiary of the McDonnell Douglas Corporation.

FFMC is in a strong position to offer EDI services and systems to retailers. Its many data capture, communication, and processing businesses will provide tremendous synergies for an EDI service. Its large customer bases in retail, health care, transportation, wholesale distribution, and banking/finance give it ready-made and, in many cases, interrelated customer bases—trading communities—within which to make EDI connections. For instance, the consumer-purchase data that FFMC is already capturing at the retail outlet could easily be routed back to the vendors of retailers in EDI purchase order/product sales data message formats. Its vast numbers of consumer, merchant, banking and wholesaler/transport carrier customers would allow it to provide payment/settlement services among all these parties. Stay tuned.

Other Information Technology Companies Approach the Network Services Market

EDS still has no real EDI group, but has a strong data services network service, EDSNET, with nodes and support worldwide. It is a support function to EDS's many vertically focused market groups (manufacturing, transportation, health care, etc.). EDS's acquisition last year of SD-Scicon expanded its EDI software products and customers.

Texas Instruments reorganized to get into the service and software business and reduce its dependency on semiconductor and hardware businesses.

Motorola is not an EDI player *per se*, but is setting up businesses/subsidiaries that provide network services. Motorola is big in the cellular phone/mobile communications equipment market and wants to fertilize those businesses with other ventures. Its Ardis network and its recently created INFO Enterprises for electronic procurement of semiconductor products position it to play either as a commercial provider to corporations or as an OEM vendor to a reseller. ■

Analysis: The Wisdom of Combining Consumer and Corporate Electronic Commerce

The major players (except BT) are wisely positioning themselves to provide both consumer-oriented and corporate-oriented electronic commerce services. AT&T, GEIS, and Advantis all have substantial revenue streams coming from credit card and other point-of-sale applications in addition to their EDI and other corporate-to-corporate transaction services.

This is a wise move because (1) consumer purchases drive all business activity; (2) consumer transactions, the smallest in dollar value, are the largest in terms of discrete transactions and therefore require an intensive processing effort, making consumer-transaction processing, in and of itself, a good business to be in; and (3) as a consequence of number one, today retailers and their suppliers are trying to directly—electronically—connect consumer transactions with manufacturing/distribution activities. As value chains streamline themselves through electronic commerce applications, applying lean-production and quick-response distribution strategies, the consumer becomes the pivotal action-event that triggers the whole chain and sets it in motion.

Network companies—electronic commerce service providers—that embrace both consumer and intercorporate activities are in the premier position to offer full value chain services. To ignore the consumer sector, to disassociate it from the rest of the value chain, is folly. Those who embrace it all are in powerful positions to provide value chain re-engineering, which is happening in many industries today and which INPUT believes will happen at an accelerating rate through the 1990s (see INPUT's studies on *Electronic Commerce in Health Care, Grocery, Apparel/Retail, Media, Government, Travel and Tourism, Trade and Transportation* and, soon, *Banking and Finance*).

While AT&T, GEIS and IBM/Sears cum Advantis are going after the overall electronic commerce services market from the corporate-to-corporate EDI services side of EC, bank service providers and credit card processing companies are moving into the corporate EDI segment of the EC market from the consumer side.

National Data Corporation and First Financial Management Corp. are capable of leveraging their position and capacities to offer EDI and EDI-like services with their retail and bank customers and clients of their bank customers. By applying resources to marketing and customer support, these companies can become EDI value-added networks and, on top of this, offer their strength in payment services. The strategy is for NDC and FFMC to work "upstream" into the value chain

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from their large consumer-transaction customer base. They can provide retail merchants with electronic ways to reorder inventory and pay vendors. Once successful at providing this EDI and EDI/EFT service, these companies could then move further "upstream" to link the retail vendors' vendors, and on and on.

The participation in network ventures by large retailers such as J.C. Penney and Sears, Roebuck & Company underscores how tremendously rich the potential is for consumer/retail-focused services. ■

Drug Wholesaler Association Establishes For-Profit EDI Service: To Compete with Sterling

The National Wholesale Druggists' Association has, through its for-profit subsidiary the NWDA Service Corporation, launched an EDI service. It hopes to woo its 700-plus membership of mostly pharmaceutical distributers away from Sterling Software's ORDERNET, the established EDI service provider in this particular industry niche. NWDA Service Corporation has contracted with GE Information Services to provide the actual network, processing and service support in a "private label" arrangement.

The creation of the EDI service by the NWDA reflects NWDA's desire to play a more proactive role in its industry by (1) taking direct control of the development and pricing of electronic commerce applications and (2) making a profit in doing so. It also represents a direct competitive threat to Sterling Software ORDERNET, which for the past seventeen years has been the EDI service provider of choice in the wholesale drug industry and endorsed by NWDA.

Sterling's service to the drug wholesale industry was endorsed, not mandated, by NWDA. All of Sterling's contracts with NWDA members are on a bilateral basis, not through a single agreement with NWDA. Now, NWDA members must choose on their own whether to stay with Sterling's service or to switch to NWDA's.

According to an NWDA spokesperson, part of the reason for switching was due to GEIS' lower overall service prices. The person wouldn't reveal the new prices but said that they were "attractive" and lower than any one company could get on its own.

Prices were important, he said, because the communications between the manufacturer and distributor involved lengthy documents. Sales reporting documents, contracts, and charge-back records were often very large files; larger than the typical EDI purchase order and invoice documents. Sending these lengthy documents became very expensive with high rates.

Also a factor in the decision to switch, according to the spokesperson, was GEIS' "sharing the [NWDA's] vision of an interorganizational system concept." This includes building data bases and providing E-mail to members. The data base that is scheduled for immediate construction is a UPC-style product catalog for pharmaceutical products.

NWDA's foray into the EDI value-added network business parallels the broadened focus of the association. NWDA has created a board of directors that is equally populated with pharmaceutical manfuacturers, manufacturer representatives and wholesalers. It created an application steering committee to drive future electronic commerce application development.

According to **Rob Borger**, Director of Technical Services at NWDA, the new organization is a neutral organization. It no longer just supports the wholesalers. It will bring the NWDA membership three things: aggregate purchasing power (strictly a wholesaler benefit), applications for industrywide coordination (catalogs, E-mail), and a governance mechanism for future electronic commerce development.

Analysis:

The move by the NWDA Service Corporation increases the competitive heat in the health care EDI sector. GEIS is establishing a presence in an up-to-now very attractive EDI market niche for Sterling. Whether the NWDA/GEIS offering will win over Sterling clients remains to be seen.

A number of points are worth considering.

Pricing. The move demonstrates that network services are getting ever more competitive on the issue of price. But the downward price pressure stems more from supply-side effects (increasing number of competitors) rather than demand-side effects (bargain-hunting users). Pricing is not the only consideration of users: access to trading partners, for one, is more important. User demand for VAN services is relatively price inelastic when compared to, for example, information technology hardware.

Scope of the Solution. While it may appear that, due to intense competition, network services are becoming a low-margin commodity business, this is not the case. Generally speaking, the scope of what the third-party VAN service provider can do for a trading community and its importance is expanding. NWDA wants E-mail and an electronic UPC catalog data base. It wants its network provider to offer an industrywide solution, expanding beyond just the transmission of POs, invoices, contracts, and charge-back documents. NWDA wants more from its service provider. Consequently, it wants lower per-unit prices. Without lower rates, members won't be able to move into the next stage of industrywide electronification and adopt a more complete electronic commerce solution. So, while lower rates may portend a commodity treatment of message transport, in fact they actually underscore the viability and necessity of using a third-party VAN.

[Note: Throughout the 1980s and continuing today, the necessary EDI functions of format translation, error checking, syntax checking and in some cases message store-and-forwarding stopped being performed by networks because they were built into EDI software that ran at the customer's premises. This led many to believe that EDI VANs would end up losing their role in implementing EDI and just be tranport service providers — phone companies for EDI communications. While these services are indeed "migrating" off the network into customer-premise software, the business of the EDI VAN is still viable; in some instances (particularly when a whole community/niche is on a single network) more so than ever before. VAN service revenues continue to grow and today represent almost double the expense of EDI software.]

Product Catalog Viability. The desire of the NWDA to build a product catalog underscores how important this specific electronic commerce application is becoming. To trade electronically, a catalog listing those items that are tradable is necessary. This catalog, in addition to simply listing available products, must also provide technical details of how the product is identifiable in an electronic, device-oriented environment. In other words, what are each item's bar code identifiers, and other parameters to allow its physical exchange to be electronically processable in the information/communication infrastructure? Product catalogs are proliferat-

Continued on next page

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ing in many industries as the trading communities that constitute these industries realize the technical requirement of these data bases. Catalogs exist or are being built in the apparel/retail, book, natural gas, and shipping industries.

NWDA Viability. While GEIS may have won the bidding war for NWDA's business, it may turn out to be a Pyrrhic victory. The question is, is the NWDA EDI business a stable, lucrative, desirable business to serve? As with most distribution businesses, there has been tremendous consolidation of drug wholesalers. Over the last 15 years, the number of drug wholesalers has dropped an order of magnitude: from over 600 to 75 today. Wholesalers are worried that their niche may be getting re-engineered out of existence, in part by better communication technologies such as EDI. Hospitals and pharmaceutical manufacturers can coordinate directly with each other, given a boost from information tools, and no longer need to rely on intermediaries. Wholesaler initiatives aimed at moving into "value-added" distribution — third-party inventory management, JIT drug deliveries, logistics management, etc. — may be the correct strategy in saving themselves from extinction. But the jury is still out. The possibility that wholesalers are getting their businesses squeezed out is very real. Has GEIS just bought into an industry niche that won't be around in five years?

> “Wholesalers are worried that their niche may be getting re-engineered out of existence…”

Relationship with HEDIC. The Healthcare EDI Corporation is a consortium of hospitals and insurance companies that was formed last year to initiate widespread usage of EDI in the health care industry. NWDA is not working with these people now but may in the future, according to Mr. Borger. The two groups have different agendas/needs. First, HEDIC is driven by buyer groups; NWDA is basically on the selling side of the equation. HEDIC people have never done EDI; NWDA has been doing EDI for two decades. HEDIC is in the EDI educational phase; NWDA is fine tuning its EDI capacities by adding other electronic commerce features and migrating from proprietary to standard (X12) data formats. The two groups may merge later through a harmonization of network service charges, according to Borger. Right now, HEDIC uses AT&T and Sears Communications Company (now Advantis) as its designated network service providers.

The Role of Trade Associations. NWDA is aggressively taking a role in shaping its members' organization. It created the for-profit body, NWDA Service Corp. This parallels the American Trucking Association's ATA Services, and others.

Summary. In the short run, this is a competitive affront to Sterling Software. NWDA is telling Sterling that it is overpriced and too narrowly focused on just EDI-style processing. NWDA wants a fuller complement of electronic commerce services, namely, a UPC data base and E-mail. In the medium term, it is less clear that GEIS has gained a money-making niche. The consolidation of drug wholesalers and the lower service prices that GEIS charges makes the NWDA business potentially a marginal one. Long term, the roles that the NWDA, the association management, and NWDA, the corporation, will play is dubious. Will there be further consolidation of wholesalers, thus reducing the voice of NWDA? Will NWDA be absorbed into HEDIC or vice versa? GEIS has bought market share in the overall health care EDI community, and this is a real asset. ■

Prime's Demise: BT and Other E-Mail Services Look for a New Platform

Minicomputers from Prime Computer Inc. were the platform of choice for many public E-mail service providers around the world, including BT North America. Running on these Prime computers was message-switching software originally produced by Dialcom, which was acquired and then absorbed into British Telecom. Now that Prime Computer Inc. has abandoned computer manufacturing altogether and exists only as ComputerVision Corp., many service providers, including BT, have discovered greater urgency in finding a new hardware and software platform on which to provide their commercial services.

According to a spokesperson for BT North America, the company is moving away from its Prime platforms. It is also developing new messaging software based on the X.400 architecture.

Prime has inaugurated a "Re-Hosting" program to help its former customers find new hardware platforms for their business.

Worldwide there are 11 licensees of the Dialcom messaging software running on more than 130 Prime computers in 21 countries. ■

Calendar

September 14-17, Bethesda Hyatt Regency, Washington, D.C., EDI for Government, EDI World/DISA, 301-445-4405.

September 15-16, Hyatt Regency Bethesda, Washington, D.C., Third Annual EDI for Government Conference and Expo, USPDI, Inc., 301-445-4400.

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

October 11-14, Convention Center, San Antonio, TX, Annual Conference, Council of Logistics Management, 708-574-0985.

October 13-14, San Jose Fairmont Hotel, San Jose, CA, Aerospace & Electronics 2000, Aerospace Industries Association/DoD/EIDX, 214-475-1838.

October 26-28, San Francisco, CA, Electronic Messaging '92, Electronic Mail Association, 703-875-8620.

* October 28-30, Bonaventure Hotel, Fort Lauderdale, FL, Uniform Code Council EDI User Group Meeting, Uniform Code Council, 513-435-3870.

November 1-3, San Francisco, CA, INPUT's Annual Executive Conference, INPUT, 415-961-3300. (Rescheduled)

1993, January 10-13, Hyatt Regency, San Antonio, TX, Financial EDI Conference, Treasury Management Association and National Automated Clearinghouse Association, 301-907-2862.

* (Asterisk indicates new entry since last month)

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EDI in Mexico—North American Free Trade and EDI

The North American Free Trade Agreement (NAFTA) and EDI fit together naturally. Both intend to make commerce more efficient. Both lower the barriers between trading parties. Both help to increase the overall volume of trade. It is no surprise, then, to see EDI usage ramping up in Mexico (and in Canada) as the free trade agreement begins the ratification process.

The *EDI Reporter* visited Mexico recently to investigate firsthand the developments, the players, and the users that are making EDI happen in Mexico.

Mexico is the U.S.' third largest trading partner, behind Canada and Japan. It is also the fastest growing export market for American goods. INPUT believes that growth in EDI infrastructure support systems will parallel growth in trade between the U.S. and Mexico. International trade and logistics is one of the driving industries for electronic data interchange and electronic trading infrastructure development. EDI systems, connecting trading partners across all of North America, make sense.

NAFTA positions North America as a powerful equal to the European Community, whose unification is not proceeding as quickly as anticipated.

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Exhibit 1 lists some basic indicators, showing the relative trade positions of Mexico and the U.S., and the size the Mexican information technology market.

Exhibit 1

Trade Indicators and the Mexican Information Technology Market

	1989	1990	1991
Total Exports			
U.S. exports to Mexico ($B)	25.0	28.0	33.0
Mexican exports to U.S. ($B)	27.0	30.0	32.0
Information Technology Indicators			
U.S. exports of software to Mexico ($M)	9.2	13.2	20.8
Total user expenditures on hardware in Mexico ($M)	580.0	691.0	802.0
Total user expenditures on software in Mexico ($M)	160.0	195.0	230.0
Total user expenditures on services in Mexico ($M)	212.0	264.0	316.0

Sources: U.S. Census Bureau, International Monetary Fund, INPUT

Areas of Initial/High EDI Activity

The Free Trade Agreement is designed to remove regulatory impediments to commercial activity in order to stimulate growth within each of the three countries' economies as well as among the three economies. In general, the greater the trade volumes (domestically or internationally), the greater the need for infrastructure to support the volumes. Since EDI is part of such an infrastructure, the need to establish EDI systems follows the inevitable growth in economic activity.

The areas/industries in which EDI is already playing a role and which will benefit from expanded trade are examined below.

Automobiles

The auto industry is the central industry for EDI activity in Mexico at this time. There are eight major automobile manufacturers with plants in Mexico, with approximately 300 Mexican suppliers serving them and another 100 suppliers based in the U.S. and Canada. The EDI managers from these manufacturers and suppliers are very organized; they meet once a month in Mexico City to discuss implementation issues, and have informally identified which EDI networks and software vendors the entire industry should use. **Gabriela Diaz**, EDI Coordinator for **Volkswagen** (Puebla) is the chief organizer and contact and represents the Mexican auto industry at the **Automotive Industry Action Group** (AIAG—based in Detroit).

Mexican car manufacturers are: **Ford**, **Chrysler**, **GM**, **Volkswagen**, **Nissan**, **Dina/ Navistar**, **Honda**, and **Mercedes-Benz**.

Retail

Retail is the next biggest EDI user constituency, after the auto industry. **Sears** has begun doing EDI in Mexico. There are Sears stores in Mexico doing EDI with Mexican suppliers. Sears' EDI program utilizes the U.S.-based Sears network. Sears Mexico currently has four or five suppliers using EDI and wants 100 suppliers on board by the end of the year. Eventually, Sears wants to have approximately 250 suppliers running EDI. Further stimulating the Mexican retail sector's use of EDI will be **Wal-Mart**, which intends to have 30 Wal-Mart stores open throughout Mexico by the end of 1993. These stores will undoubtedly follow the operational strategy of their U.S. parent company and implement EDI.

Banking

Another significant opportunity for EDI in Mexico is banking, primarily because Mexican banks are more similar to European and Canadian banking environments in that they are consolidated (the top three control close to 90% of all corporate and consumer banking services), operate nationally, and more closely match the "universal bank" model, providing insurance and investment banking services in addition to payment and credit services. Because they are less restricted in a regulatory sense and because they are more consolidated, Mexican banks play a much more central role in commerce in the Mexican economy.

Most large companies and conglomerates in Mexico—particularly the banks—have built and operate their own private telecommunications networks. Banks and big companies cannot rely on **Tel-Mex**, the now privatized but formerly state-run telephone company (PTT). These private networks handle voice and data, are fully interconnected to international Administrative Telecom Domains and, especially in the case of the banks, are quite extensive.

The Mexican equivalent of the U.S. Federal Communications Commission gave permission last year for the telecom industry to have competitors. Now, the top Mexican banks are vying to become value-added networks and offer limited telecommunication services.

Banamex, **Bancomer**, and **Banca Serfin** are three of Mexico's leading banks that are moving to commercialize their extensive networks and offer EDI and network-based value-added banking services.

Bancomer's network is on a par with a telephone network: it handles data and voice; it has 450 nodes throughout Mexico (and in major foreign cities); and it uses fiber optic terrestrial lines, microwave links, and satellite links.

Bancomer wants to commercialize this network. At the heart of Bancomer's VAN offering would be EDI—not just financial EDI (such as the banks in the United States are considering), but full GEIS-like EDI. Bancomer's service would help companies trade electronically, even if they weren't necessarily conducting funds transfers.

Bancomer wants to offer other services in addition to EDI. It wants to know how to take maximum advantage of the network capacity it has and its strategic position as one of the foremost banks in the country. With a telecom network and advanced "electronic commerce" services, Bancomer could transform itself into a combination VAN/bank/outsourcer.

The **Bank of Nova Scotia**, one of Canada's six big banks, has acquired a five percent interest in Grupo Financiero Inverlat S.A., a Mexican brokerage and banking conglomerate. The agreement will give the Mexican financial group access to leading-edge technology in the areas of telecommunications and payments-clearance systems. Says **Helen Sinclair**, president of the Canadian Bankers' Association, Mexican banks "have the same type of nationwide banking system as we do but they don't have much of the modern-day technology to tie it together."

Trucking and Transportation

Some 75% of the U.S. trade with Mexico moves by truck, and trucking company executives report shipment volumes to Mexico growing by 15% to 20% per year.

Currently, truck shipments to and from Mexico are handed off at the border, where the trailer is literally switched from a U.S. to a Mexican tractor and vice versa. A U.S. carrier hauls in the U.S., a Mexican carrier hauls in Mexico.

The NAFTA will change this in two important ways:

Continued on next page

Mexico

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- Trucking companies of both countries will be able to buy equity positions in trucking companies of the other country (subject to several restrictions). This will allow the creation of transnational carrier companies that will be able to move across the border without switching drivers or equipment.
- Trucking companies of both countries will be given relatively unrestricted access to the immediate border states of each country. This will allow U.S. service to the lucrative *maquiladora* assembly plants (see below) and Mexican carriers' access to Texas and California.

Already active users of EDI in the States, large U.S. trucking companies are now using EDI in Mexico. **Contract Freighters Inc.** (CFI—Joplin, MO) is a $140 million trucking company specializing in North-South hauling services. It has been building its business to Canada and Mexico for the past seven years, a strategy that has proved quite successful (as most long-haul carriers focus on East-West hauling services). Revenues for hauling to and from Mexico grew from $2.4 million in 1986 to $17.4 million in 1990. The company has Mexican partners to handle the services inside Mexico. CFI built a bilingual EDI system to integrate its U.S. and Mexican operations. CFI and its Mexican affiliates access the system to retrieve twice-daily updates on shipments. The updates are used by sales representatives to answer phone inquiries by customers.

The three largest freight consolidators in the U.S.—**Yellow Freight** (Overland Park, KS), **Consolidated Freightways** (Menlo Park, CA) and **Roadway Services Inc.** (Akron, OH)—are outfitting freight terminals in the largest Mexican industrial centers (Mexico City, Guadalajara and Monterrey) and they are forming alliances with Mexican motor carriers. These giants, all users of EDI in the States, will sooner or later begin to extend EDI communications across the border as their transborder business increases.

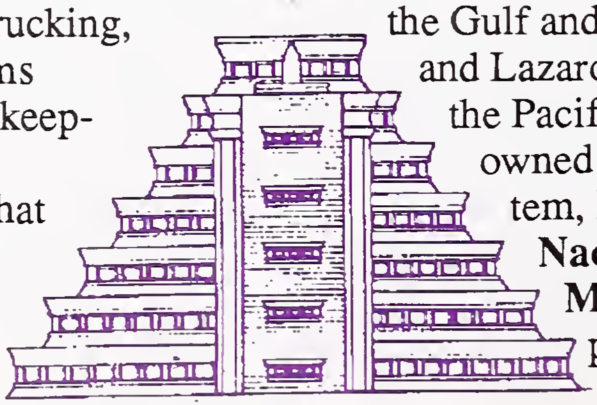
Because the majority of trade between the U.S. and Mexico moves by land, NAFTA impacts on maritime transport services may not be so important. However, many deep-sea shipping companies consider Mexico an important transshipment hub for the rest of Latin America.

Furthermore, many transport experts anticipate that the land-based cross-border transport infrastructure (trucking, train and Customs facilities) is not keeping up with the booming trade that it is supposed to support. The rising congestion makes Mexican port and waterborn traffic an increasingly attractive transportation alternative.

Port operations—including terminal operation, stevedoring (loading and unloading ships), warehousing and other services—were formerly state-run businesses in Mexico and have recently been privatized (at this time, open for only Mexican-, not foreign-owned businesses to operate). Nevertheless, leading U.S. ship lines **Sea-Land Services** Inc. (NJ) and **American President Lines Ltd.** (Oakland, CA) have sought the right to establish terminal operations in Mexico. Their strategy is to gain better control of the local infrastructure so that they can maintain the level of service (which includes EDI services) that they offer in other parts of the world.

Other foreign ship lines that have established operations in Mexico include **Lykes Bros. Steamship Co.**, **Atlantic Container Line**, and **Australia-New Zealand Direct Line**.

Mexico's central port authority, **Puertos Mexicanos**, is making major infrastructure investments in Mexico's four leading ports, Altamira and Veracruz on the Gulf and Manzanillo and Lazaro Cardenas on the Pacific. The state-owned railroad system, **Ferrocarriles Nacionales de Mexico**, anticipating greater



port activity, recently launched container-train service to Mexico City from Veracruz. A U.S. consulting company, **Preinvest Inc.** (Bethesda, MD), is helping Mexico upgrade its ports.

Maquiladoras/Light Manufacturing

Maquiladoras are in-bond production facilities engaged in processing or secondary assembly of imported components for re-export, primarily to the United States. Under the "in-bond" arrangement, imported components enter Mexico duty free, but the importer posts a bond to guarantee that the finished products will be exported rather than sold on the domestic market. Otherwise, appropriate duties are collected from the posted bond.

Mexico's *maquiladora* program has been phenomenally successful, attracting capital investment from around the world and boosting Mexican employment. Twelve *maquiladora* plants were established in 1965 when the program was inaugurated. By 1991, more than 1,900 plants were operating.

Exhibit 2 shows the predominant industries using the *maquiladoras*.

Although *maquiladoras* are no longer confined to border regions, and since 1972 have been established throughout Mexico, most are located close to the border. This geographic positioning is not only better for transportation access and speed of distribution to the U.S. market (which is almost exclusively the final destination of *maquiladora* output), but it is best for EDI implementation. Mexican telephone service to U.S. telco and network service lines is relatively reliable because the distance to the U.S. is so small.

Exhibit 2

Maquiladora Industries

Industry	Share of Maquiladora Production (%)
Electrical/Electronic	28
Textiles/Apparel	15
Furniture	13
Transport Equipment	8
Other	36
Total	100

Source: U.S. International Trade Commission

Though lacking comprehensive statistics, INPUT has spoken to several *maquiladora* operators (U.S. and Mexican) to discover that EDI is being used by these plants, especially to connect to U.S. customers and foreign owners of the plants.

Maquiladoras account for about 60 percent of Mexico's non-oil exports to the United States. They are Mexico's second-largest source of foreign exchange, behind petroleum. Though they represent only 5% of Mexico's gross domestic product (and only 1% of value-added income), the *maquiladoras* are an important economic phenomenon that deserves the attention of users and vendors of EDI.

INPUT sees the *maquiladora* as a principal user of EDI in Mexico.

Franchises

In just the last few years, franchising has exploded as a new business phenomenon in Mexico. In particular, it is U.S. firms that are being franchised. Exhibit 3 lists some of the major names.

Franchises in the U.S. have been major users of EDI, especially to control internal distribution of costs and goods among the family of franchised outlets.

There is no reason why the already successful use of EDI by franchised companies in the U.S. should not be duplicated in Mexico.

Government

While the government of President Salinas is rapidly privatizing major segments of the Mexican economy, many of Mexico's core industrial enterprises are still state owned (such as, for example, petrochemicals). These state-owned enterprises as well as more conventional government administrative enterprises are

Continued on next page

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revamping themselves using information systems including EDI. Recently, the government turned over the administration of the country's social security system to the private sector. Leading Mexican banks now disseminate social security payments.

Exhibit 3

Franchises in Mexico Likely to Implement EDI

- Burger King
- McDonald's
- Arby's
- Holiday Inn
- Days Inn
- Alphagraphics
- Century 21
- Blockbuster Video
- Seven Eleven
- Midas
- Kentucky Fried Chicken
- Computerland
- Embassy Suites Hotels
- Domino's Pizza
- Florsheim
- Oshman's
- Bennetton
- Pizza Hut
- Denny's

Source: Mundo Ejecutivo

The Canadian outsourcer, **SHL Systemhouse Inc.**, was just awarded a $500 million project by the Mexican government to manage information systems in the tax and customs bureaus.

In these government projects, EDI, EFT and interorganizational systems are some of the important modernizing technologies sought by the government.

Telecommunication and Network Infrastructure

"One of the worst problems in Mexico," according to Gabriela Diaz, Director of EDI at Volkswagen Mexico, is Tel-Mex, the now privatized but formerly state-run telephone company (PTT). Concurring with Ms. Diaz is **Victor Almandoz**, president of **Comunicaciones Virtuales**, an EDI systems integrator and software supplier based in Mexico City.

In Mexico, Tel-Mex provides the "local loop" connection to more reliable value-added networks. EDI users typically use the telephone company only to dial out to the closest network node. The most prominent network service providers in Mexico today are the **IBM Information Network** and **Electronic Data Systems. INFONET**, **AT&T** and **GEIS** have network facilities in Mexico, but do not have the high profile of IBM or EDS. For example, the Mexican auto industry has specified IBM and EDS as the preferred VANs.

INFONET has a strong business in providing links between U.S.-based credit card authorization and processing centers and Mexican resort locations, but does not provide EDI services. INFONET also provides international E-mail to government agencies and multinational companies.

In addition to the commercial networks, private corporate networks are used extensively in Mexico. Retailers Sears and Wal-Mart, and most of the U.S. car manufacturers, have their Mexican plants sending EDI messages through their own private (often satellite) networks. The Ford EDI program, for example, has its Mexican suppliers communicating with the Mexican Ford plants through Ford's Detroit-based switch.

The two largest banks in Mexico, Banamex and Bancomer, have vast, extremely sophisticated voice/data networks. These banks are considering commercializing their networks. The Mexican equivalent to the FCC gave permission last year for the telecommunications industry to have competitors. As mentioned above, Bancomer's network is on a par with an advanced telephone network: it is very extensive.

Prospects for Tel-Mex to improve its service appear good; however, many users in Mexico are skeptical. The company was acquired in December 1990 for $1.76 billion by an international consortium led by the Mexican financier, **Carlos Slim**. Slim's two partners are **France Telecom** and **Southwestern Bell Corp.** While Slim's management has been renovating the system, lawsuits by Mexican businesses regarding slipshod service are growing in number.

EDI Vendors in Mexico

In addition to the network service providers mentioned above, EDI is being delivered by a handful of key players in Mexico.

The Mexican auto industry has narrowed its recommendations for EDI software to three vendors: **Supply Tech**, EDS and IBM. Of course, if one of the auto industry members has a platform that doesn't fit with these recommended packages, allowances are made. "We don't want the kind of problem (of scores of different software vendors) like in the U.S.," says Volkswagen's EDI Director, Gabriela Diaz.

EDI software from Supply Tech is sold through a distributor in Mexico City, Comunicaciones Virtuales (see above). President Victor Almandoz says Supply Tech provides good support, and IBM is too large to compete with in the midrange market (Premenos' niche).

There are also large professional services firms with EDI practices in Mexico, particularly **Price Waterhouse** and **Andersen Consulting**.

Exhibit 4 lists various EDI product and service providers by delivery mode. Exhibit 5 lists potential EDI network providers. ■

Exhibit 4

Leading EDI Software and Service Vendors in Mexico

Vendor	Translation Software	Network Services	Professional Services
EDS	✓	✓	✓
IBM Information Network	✓	✓	✓
Supply Tech	✓		
Price Waterhouse			✓
Andersen Consulting			✓
Comunicaciones Virtuales	✓		✓
Private Networks (Chrysler, Wal-Mart, Ford, etc.)		✓	

Source: INPUT

Exhibit 5

Potential VAN Entrants in the Mexican EDI Market

- GE Information Services
- AT&T
- INFONET
- Bancomer
- Banamex
- Banca Serfin

Source: INPUT

Outsourcing and EDI: Natural Synergies

With the creation of **Advantis**, through the merging of the **IBM Information Network** and the **Sears, Roebuck & Company** data network, and its ownership by IBM's outsourcing business unit **ISSC**, EDI and outsourcing are demonstrably related and complementary businesses. In many ways, they are the opposite sides of the same coin.

Outsourcing is the turning over of the entire functional operation of an organization (typically, the data processing and management information systems function) to an external vendor. Outsourcing has been around for years, but recently it has grown dramatically as a business market.

Successful companies are focusing on key "competencies" and are not wasting their resources on extraneous business functions that outside contractor-vendors could perform more efficiently at less cost. EDI and outsourcing are ways in which a company relinquishes control of business functions which it no longer wishes to perform for itself.

EDI and outsourcing are related to each other in three general ways. In order of increasing sophistication, they are:

- *Phase 1: EDI as an outsourcing enabler.* EDI is a vehicle for the user organization to outsource certain data processing functions of a company. Especially in the area of accounting (accounts receivable and payable), EDI is used to send information to a single vendor (typically a bank but also perhaps specialized bill processing companies, collection agencies, etc.). In a sense, EDI is nothing but a vehicle for outsourcing: it is used to convey a purchase order to an independent vendor, and the vendor provides a service or product that the buying company has decided not to produce in-house, but rather outsource to the vendor. Examples of this level of EDI/outsourcing are the activities of **Cass Logistics** and **GTE Health Services** for their bill processing and collection services.

- *Phase 2: Outsourcing as an EDI enabler.* The EDI program (along with several or all other data processing functions) is outsourced by the user organization to a vendor. The vendor brings management expertise and economies of scale to the EDI program. This makes especially good sense in an EDI environment because getting all trading partners into EDI—or at least making all trading partners appear to be doing EDI from the hub company standpoint—is an extensive several-year project that is best turned over to a company that has specialized expertise, scale capacities, etc. Examples of this EDI-to-outsourcing relationship are Advantis' with Sears, Roebuck & Company and **Electronic Data Systems'** with **General Motors**.

- *Phase 3: Electronic commerce, communication and media are provided by a single vendor.* More and more internal applications are incorporated into larger, transcorporate media networks. Point-of-sale networks are feeding into vendor manufacturing systems as well as market research data bases. UPC catalogs are feeding into point-of-sale price look-up tables. Inventory data bases (for example, in hotels) are updating larger reservation systems (which include airlines, hotels, and car rental services). Textbook materials, originally created on the global academic network, Internet, are maintained in data bases for on-demand printing. Legal data bases feed law office systems, and on and on. The point here is that establishing, organizing, and maintaining the relationships (including the legal aspects) of these seamless system flows require a third party. A third party is impartial, brings economies of scale, has contacts in many different parties (an advantage in distribution channels), and sees the bigger picture. When Wal-Mart directly sends raw point-of-sale data to its suppliers and lets the suppliers figure out the appropriate replenishment quantity, the nature of the relationship between Wal-Mart and the vendor is so substantially different from the conventional vendor-customer relationship that it is best for a third party to come in and take responsibility for it.

Potential examples in this most advanced form of outsourcing/EDI service might come from the alliances of **IBM-TimeWarner-TeleCommunications Inc.-Sears**; **GTE-Capital Cities-J.C. Penney**; or **GEIS-NBC-GE Capital**. ■

Isocor Releases X.400 Software Toolkit for EDI Developers

Isocor (Los Angeles, CA) is offering the X.400 Toolkit for EDI—a package of software development tools that allows EDI users and software vendors to make EDI translation software capable of sending/receiving documents via X.400 and X.435.

The X.400 Toolkit for EDI, designed to run in MS/PC-DOS environments, is priced at $3,950. EDI tools for PC UNIX environments are available from Isocor separately.

Isocor is targeting its Toolkit to EDI software vendors, developers, mapper providers, EDI end users producing in-house EDI applications, systems integrators, computer systems vendors, public carriers providing X.400-based EDI services, and software developers offering complete EDI solutions. **American Business Computers** and **EDI/Able** are two EDI vendors that have incorporated the toolkit into their product offerings to date.

A core module of the toolkit is Isocor's File Programmatic Interface (FPI), which is a collection of conversion maps from the various EDI formats (X12, EDIFACT, UCS, etc.) to X.400 or X.435 (the EDI-specific X.400) formats. According to Isocor, most EDI translation software can be adapted within hours to generate and receive EDI documents with X.400/.435 protocols using the FPI. The client/server-designed FPI can run on a PC, RISC or mainframe platform independently of the platform that runs the EDI translation software.

Source: David Knight, Isocor, (310) 476-2671. ■

Hong Kong Inches Ahead with a Community EDI Service

A Stepping Stone to the People's Republic?

Tradelink Electronic Document Services Ltd., the consortium-owned Hong Kong company set up to establish EDI services for the city-state, will issue a Request for Proposal (RFP) for the supply of hardware, software and services in order to establish a community electronic trading service for Hong Kong.

Tradelink anticipates signing contracts with the successful vendor or vendors in mid-1993 and starting its desired "Community Electronic Trading Service" in mid-1994.

Tradelink asks bidders to the RFP to address three main areas: the EDI switching facilities on which the trading service will be based, community access facilities for non-computerized companies, and EDI end-user software.

Continued on next page

Hong Kong *. . from page 9*

Tradelink is levying a registration fee on RFP applicants "to discourage non-serious parties." The fee was not disclosed.

Already in Hong Kong there is a rival EDI service in operation: **Intertrade**. Intertrade is owned by **Cable and Wireless plc**, which is the U.K. overseas long-distance telecommunications carrier that has been launching EDI services around the world. Intertrade licensed its EDI switching software from **AT&T**'s **Istel** (in the U.K.). Istel's U.K. EDI service, EDICT, is linked to Intertrade in Hong Kong via the **Mercury** telecommunications network (U.K.), whose principal competitor is **British Telecom**.

Background: Tradelink has been very slow in developing EDI services for Hong Kong. The company was founded in 1988 by a group of principal Hong Kong banks, transportation companies, and telecommunications companies. The Hong Kong government, though not a stockholder, is on the board of directors. Disagreements over the nature of the service have kept the company in a seemingly perpetual "business analysis phase," preventing it from making substantial forward progress in instituting a service.

"Electronifying" the city-state of Hong Kong has the uniquely difficult technical challenge of bringing up small family-owned businesses that, because they use Chinese script, are devoted facsimile machine users and have little use for personal computers. The predominance of this kind of small entrepreneur is much more widespread than in Singapore, Taiwan, South Korea or Japan—other Asian locales that use ideographic text.

All the East Asian industrial centers see the development of EDI capability as strategic and crucial to their export-oriented economies. Hong Kong, with its competing Tradelink and Intertrade EDI service groups, is looking over its shoulder at Singapore's extremely successful TradeNet, Korea's KT-Net, Taiwan's recent inauguration of a service, and the more comprehensive moves within Japan to establish EDI, particularly with overseas customers.

Analysis. Hong Kong's move to adopt EDI has been inexcusably phlegmatic. Nevertheless, Hong Kong may prove to be the gateway for establishing EDI throughout the People's Republic of China (the PRC).

The technical problems are the greatest challenge. The use of facsimile/EDI hybrid systems (see *EDI Reporter*, November 1991) could play an important role. Already TRW Financial Systems (Berkeley, CA) has proposed a system, using optical character recognition of handwritten Chinese characters, that would convert facsimile transmissions into formatted EDI messages (see *EDI Reporter*, October, 1990).

Political problems concerning the commercial climate of the community when it reverts to communist control in 1997 also cloud the city-state's prospects, but less so than the other problems. Any development of EDI will be a worthwhile investment and bring enduring value for years to come—even after the communist takeover. Already, the coastline of China, especially in the region bordering Hong Kong, is growing economically in government-sanctioned special economic areas (where laissez-faire capitalism, including private property, is condoned). Establishment of EDI now in Hong Kong will probably be the beachhead for establishing EDI in greater China itself.

Source: Juletta Broomfield, Tradelink Electronic Document Services, Ltd., Hong Kong, 530-0600. ■

News Bits

IBM Spain is officially distributing EDI software manufactured by **DNS Associates, Inc.** (Lexington, MA) in Spain. DNS already produces inexpensive PC EDI software that IBM resells in the U.S. DNS' software, EDI/EDGE (fully integratable with applications software) and EDI/ENTRY (a receiving platform) are being translated into Spanish. Spain's automobile, retail and pharmaceutical industries are in the forefront of EDI use in Spain.

The warehouse industry is a $61 billion industry, according to **Cass Logistics, Inc.**, and twice the size of the U.S. railroad industry, yet it is invisible to the general business community. A new directory of the warehouse industry has been published by **Affiliated Warehouse Companies Inc.** and is free of charge. The contact number is: (908) 739-2323.

The aviation industry's voice and data communication network, **SITA**, has produced a DOS-PC EDI software package designed to streamline spare part procurement. SkyForm, distributed by SITA's subsidiary, **Scitor**, allows on-line access to the procurement data base of the **Air Transport Association of America** for information on parts availability, pricing and lead times. It also supports communication with existing SPEC 2000-based purchasing and fulfillment systems, including mainframe-based applications.

GE Information Services has released a software product to assist manufacturers in creating and maintaining Universal Product Code (UPC) bar codes according to general merchandise and apparel industry standards. Running in a Windows environment, the software formats bar code data into the ANSI 832 Price Sales Catalog document for EDI communications; it prints merchandise tickets, maintains an internal numbering system to prevent duplication of UPC code assignment, and performs other functions. In addition, it seamlessly connects to GEIS' on-line catalog data base service that registers apparel manufacturers' merchandise bar codes. Bar Code Director™ is priced at $2,800 separately, or sold as part of a $4,900 package that includes GEIS' EDI*PC software product and the registration fees for GEIS' EDI*Express and UPC*Express network services.

Calendar

October 5-7, Opryland Hotel, Nashville, TN, EDIA's 24th Annual EDI Users Conference and Exhibit, EDI Association, (703) 838-8042.

October 11-14, Convention Center, San Antonio, TX, Annual Conference, Council of Logistics Management, (708) 574-0985.

October 13-14, San Jose Fairmont Hotel, San Jose, CA, Aerospace & Electronics 2000, Aerospace Industries Association/DoD/EIDX, (214) 475-1838.

October 26-28, San Francisco, CA, Electronic Messaging '92, Electronic Mail Association, (703) 875-8620.

October 28-30, Bonaventure Hotel, Fort Lauderdale, FL, Uniform Code Council EDI User Group Meeting, Uniform Code Council, (513) 435-3870.

November 1-3, San Francisco, CA, INPUT's Annual Executive Conference, INPUT, (415) 961-3300. (Rescheduled)

January 10-13, 1993, Hyatt Regency, San Antonio, TX, Financial EDI Conference, Treasury Management Association and National Automated Clearinghouse Association, (301) 907-2862

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New Ways to Integrate EDI-Application Software

The EDI user community has been vexed by a single problem: they are unable to easily integrate the EDI translation software with applications software. Seamless transmission of data from one company to another is not happening. Approximately 80% to 90% of EDI users today simply receive EDI messages, print them out on paper, then re-key the data into their applications.

In addition, most EDI users conduct EDI with less than 50 companies. The rest of their communications continues in the paper-based mode. So, not only has the current EDI architecture made it difficult for users to integrate with internal applications, it has made it difficult for them to integrate electronically with trading partners.

In the past few years, users and vendors alike have wondered if EDI is failing on its promise. To users, it is a technology that isn't giving the value it promised. To vendors, it is a market that hasn't materialized. Rosy forecasts in the mid-1980s predicted that EDI would be almost a two billion dollar market by now. EDI isn't even close to a billion.

API Kits Proliferate (Sterling Software, TSI International)

Many EDI translation software vendors are selling prepackaged EDI format sets and application program interfaces, giving users a "plug-and-play" EDI capability. The prepackaged EDI format is a collection of EDI standard documents that match the needs of a particular large "hub" company such as a **Sears**, **Wal-Mart**, **Chrysler**, etc. The application program interfaces allow the vendor's EDI translation software to map data from the file formats

Continued on next page

Integration. . . from page 1

of an application to the EDI translation software.

Sterling Software is making interface libraries that link its Gentran midrange and mainframe translation software packages with popular application software packages. The interfaces map data elements between the formats of the applications to standard EDI formats. Alliance partners of Sterling that have supplied interfaces so far include **Dun & Bradstreet Software**, **Walker Interactive Systems**, **American Software**, and **J.D. Edwards & Company**.

TSI International has launched "Trading Partner Kits," Windows-based EDI software packages that have been customized by TSI for specific trading partner communities. The kits include the translation software with the transaction sets/messages (purchase orders, invoices, ship notices, etc.) of the specific "hub" company(-ies) of the community. TSI has mass produced 35 kits to date for trading partner communities that include those serving Wal-Mart, **General Mills**, **Baxter**, Chrysler, **Allstate**, **Kmart**, government programs such as **GATEC** (Government Acquisition Through Electronic Commerce) and **HCFA** (Health Care Finance and Administration Department), and others. An additional 165 kits are under development. The kits are priced from $249 to $345 per kit and require TSI's Trading Partner PC software, which is priced at $495. TSI has developed an in-house "software factory" that produces the kits.

Digital Equipment Corporation (DEC) also added more APIs to its collection and, significantly, added an API that allows DEC EDI translation software to serve applications running on IBM MVS and VSE (mainframe) platforms.

Supply Tech, the largest provider of MS-DOS (PC) EDI translation software, pioneered the concept of prepackaged EDI software. It now has a library of thousands of "Overlays," which are predefined, premapped transactions. These include commonly used transactions specific to major hubs. Supply Tech's Overlays are priced from $150 to $300 each and must be used in conjunction with Supply Tech's STX EDI software, which is priced at $2,295 (and comes with two Overlays).

E-mail Linkages to EDI Gaining in Number

Using E-mail and EDI combinations among user organizations is making more and more sense. In response, IS vendors are coming out with offerings that combine EDI and E-mail.

- **GEIS** offers its general Business*Talk E-mail service to specific vertical markets such as retail (Retail*Talk).

- **AT&T** and **Microsoft** formed an alliance so that Microsoft's local-area network (LAN) E-mail products connect to the AT&T EasyLink network.

- **IBM Information Network/ Advantis** will release in December "IBM Mail LAN Gateway/2," which allows for the connection of the IBM Information Network (IN) and E-mail systems running internally in companies. People on company E-mail networks can use Gateway/2 and the IBM IN to communicate with people on other internal E-mail systems. IBM Mail Exchange, cc:Mail, OfficeVision, and DISOSS are E-mail systems to be supported in the December release; **Lotus** Notes, **Novell** NetWare and other LAN E-mail and operating systems will be supported in the first quarter of 1993.

- **CompuServe** has an MHS gateway so that any MHS-based LAN network (Novell, **DaVinci**, etc.) can connect to CompuServe and beyond to other LANs that are connected to CompuServe.

- EDI software vendors, such as **Premenos**, **Blue Rainbow**, **American Business Computer**, **Tandem/Mpact**, Digital and Sterling Software have E-mail features and/or modules that work with translation software.

- Some E-mail software vendors, most notably **Verimation** (the commercial IS subsidiary of Volvo), have introduced EDI software that works with its internal office automation/E-mail software.

EDI and E-mail have natural affinities and complement each other—frequently in ways that are not immediately apparent.

INPUT believes that using E-mail internally and connecting the internal E-mail system to applications and EDI translation software will prove to have greater strategic merit in the next couple of years than having the two messaging modes used "side-by-side" to connect trading partners. Intra-organizational E-mail/EDI integration is critical because it is the way internal departments can integrate applications and develop a fully integrated, "EDI-enabled" organization.

- *Interorganizational E-mail-to-EDI integration.* E-mail can act as the initial phase of an EDI project, whereby a company first makes linkages with key trading partners via E-mail, then later converts them to EDI linkages. **Nordstrom** and **Tektronix** are examples of this strategy.

- *Intra-organizational E-mail-to-EDI integration.* E-mail, in this more important case, connects people, departments, and applications inside the organization. When these connections are already made, EDI can integrate all the functional processes of the company in a comprehensive way rather than integrating process by process. Requisitions for supplies, checking a customer's credit rating, and other internal workflows that require interpersonal messaging *and* are related to EDI transactions can be tied together in one seamless information system. Here workflow redesign plays a key role (see below).

INPUT recently completed a study that shows that among EDI users, internal E-mail and local-area networks are common to the general corporate IS environment. Approximately one-third of the companies surveyed (45 out of 135) had their EDI translation software connected to a local-area network. Exhibit 1 shows the results of INPUT's study.

Exhibit 1

Local-Area Networks and EDI Software

Configuration	Percent
EDI software connected on a LAN	33
No LAN (but use EDI software)	52
Have LAN but EDI software not connected	10
No answer	5

Source: INPUT

E-mail and EDI are important, complementary messaging technologies. Integration of EDI systems with internal workflows and applications is the promise of these two technologies.

Workflow and EDI: Establishing the Context for EDI

Workflow is a methodology for people to characterize work. It is also a technology (a collection of software modules) that allows people and automated information processing systems to interact in ways that best leverages the capacities of each. Thinking in terms of "workflows" solves most of

Continued on next page

Integration. . . *from page 3*

today's problems with EDI. Workflow thinking allows people to design and implement effective EDI systems. In other words, workflow thinking allows people to integrate EDI with applications and with other communication technologies (including facsimile, E-mail, voice, "real time" processes, etc.—even computer/communication technologies that have yet to be invented).

Workflow: The Concept

Several kinds of workflow products are on the market today: **AT&T/NCR**, Digital Equipment Corporation, Lotus Development Corporation, **Corporate Memories Inc.**, and others. While these help to substantiate a "market," we believe the workflow concept of **Action Technologies, Inc.** (ATI) is the definitive product. ATI's workflow is different—and more powerful—than the others because it takes as its primary and overriding purpose customer satisfaction.

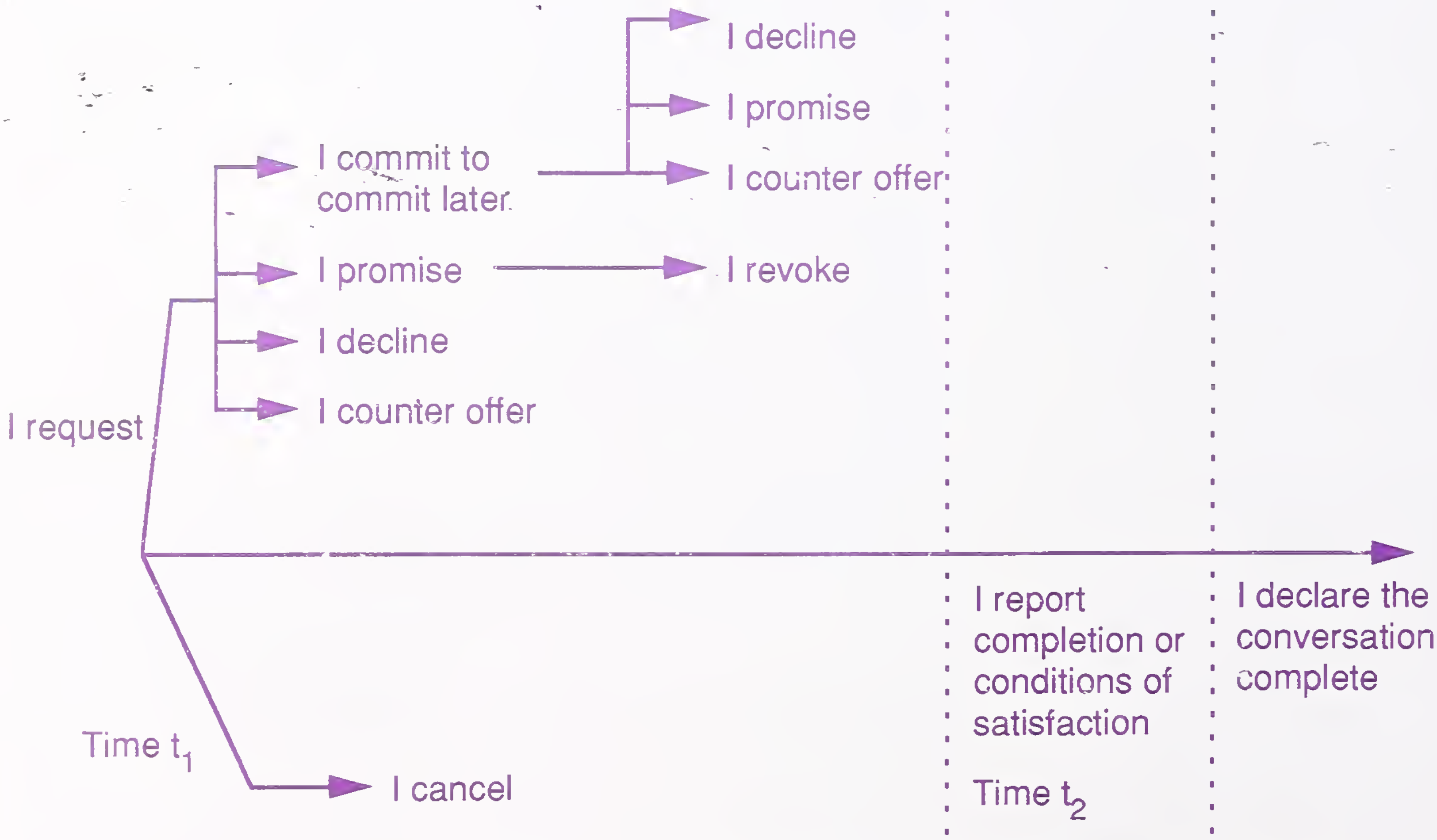
In all work situations, there are two fundamental players: a customer, who has asked for something, and a supplier or performer, who fulfills the customer's request. There may be many intermediary steps and delegations of work involved along the way in satisfying the original customer's request. These intermediary, delegated steps, however, themselves, can be characterized as more workflows, each with their own customer and performer. Work and information systems can be designed using this concept.

Exhibit 2 shows the basic "moves" involved in a workflow.

Actions that accomplish work are "set in motion" through a finite set of conversational

Exhibit 2

Basic Workflow Moves



Work is completed through a finite number of conversational moves.

Source: INPUT

moves and they are listed in Exhibit 2. Work begins with a person making a request. The performer has a variety of options in responding to the request: to promise to do it, to decline to do it, to make a counter offer, and so on, as shown. If the performer promises to do what is requested, he or she may, in turn, make a request to another person (an employee in the same organization) to do some related task. This sets up another workflow with a customer and a performer.

Completion of the work is accomplished when the performer informs the customer that the work is done and the customer, after examining the work, declares that it is satisfactory.

The whole work cycle can be depicted as a loop that begins with a customer request and ends when the customer announces satisfaction. The basic workflow loop is shown in Exhibit 3.

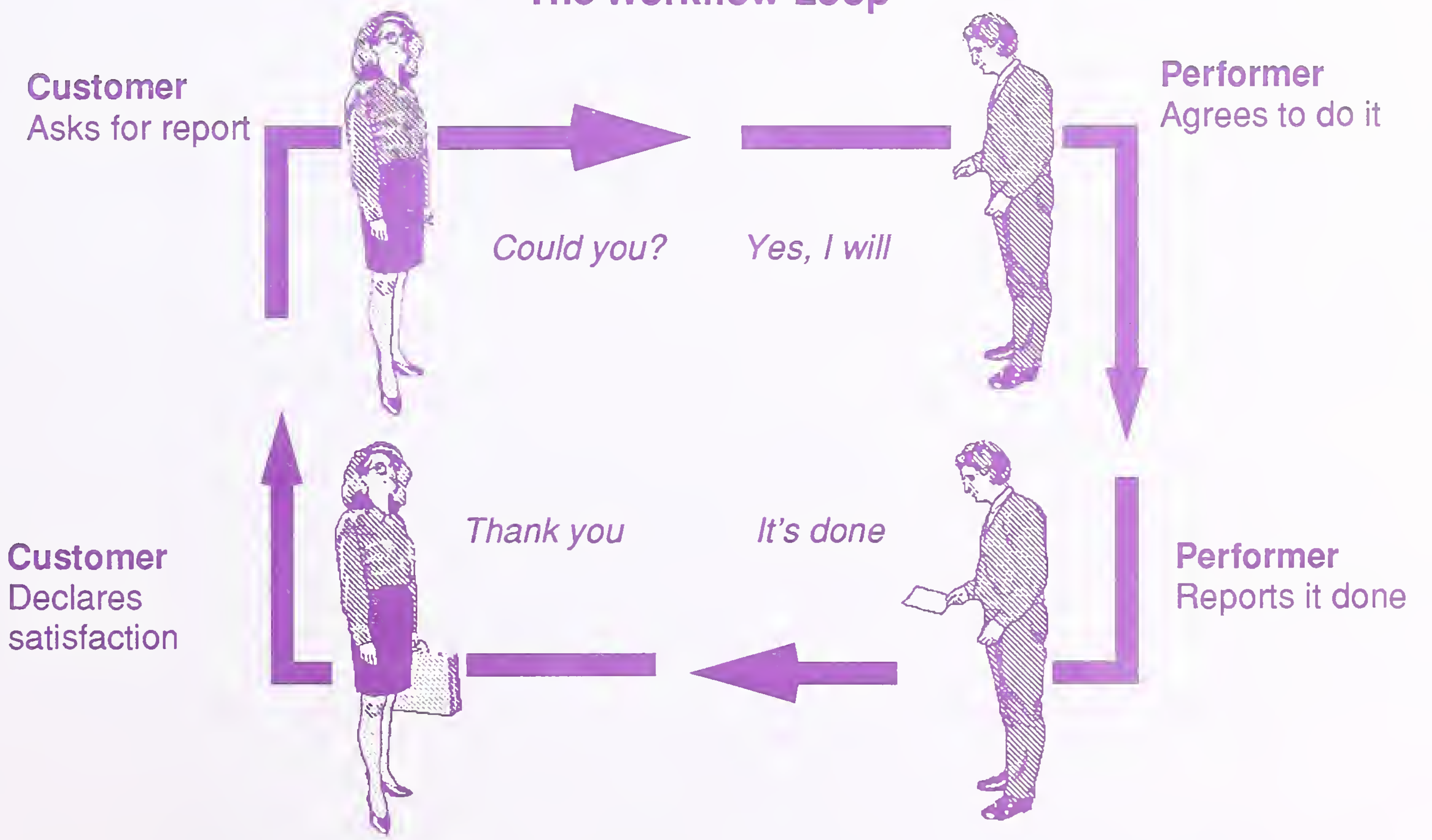
The Relationship Between EDI and Workflow

Most workflow tools today are implemented within a single organization. Nevertheless and perhaps more significantly, workflow occurs among organizations. This is, of course, the domain of EDI.

EDI data formats allow companies to streamline the flow of data between mutually corresponding business functions across organizational boundaries. For example, the EDI invoice data format allows the accounts receivable function of one company to "speak" to the accounts payable function of the company's customer. A standardized, electronic invoice is created by the accounting department of the supplier

Exhibit 3

The Workflow Loop



Continued on next page

Integration

. . .from page 5

company and sent to the accounting department of the buying company.

Yet EDI standard data formats, as currently conceived, lack the integrated vision of conversational moves which achieve customer satisfaction. As such, the purpose of any given EDI message is not connected to the larger work context. How the message is to be integrated with the general functioning of the organization is not clearly discernible. This is at the root of why company integration through EDI has not been attained.

A commercial trade is the exchange of two promises. A buyer and a seller make promises to each other. Usually, one party promises a product or service, the other party promises cash. Each party is the customer for the promise of the other. Given this understanding, a purchase order can be considered a request and an implicit promise to pay. Its acknowledgment is a promise to provide the requested product or service.

Today's EDI message formats can be classified according to workflow moves. Exhibit 4 shows this classification.

Since EDI messages weren't designed according to the conversation-for-customer-satisfaction in mind, they don't perfectly fit the model. In many cases, EDI messages are lacking equivalent workflow messages, such as declining a purchase order.

Exhibit 4

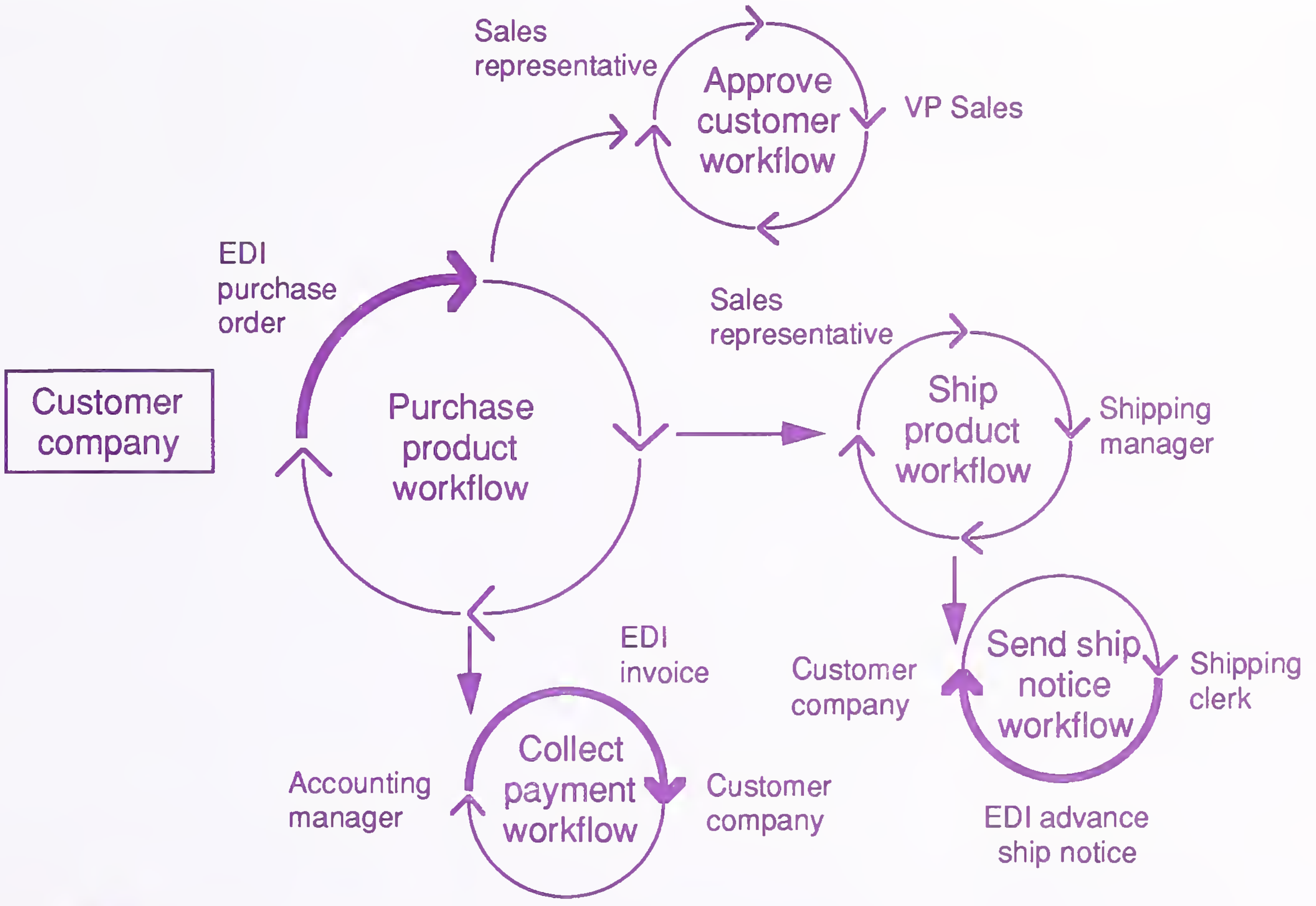
EDI Messages as Workflow Moves

Workflow Move	Corresponding X12 Transaction Sets
Request	Purchase order Request for quotation Invoice Payment order
Offer	Response to request for quotation Inventory advice
Agree to request/offer } Promise	P.O. acknowledgment Contract award
Decline request/offer	No response from trading partner
Counter offer	P.O. change
Cancel	Payment cancellation request
Report completion	Operating expense statement Payment status report
Inform	Product activity data Report of test results Trading partner profile

Source: INPUT

Exhibit 5

The Interorganizational Workflow Model Showing EDI Linkages



➜ Thick arrows represent EDI linkages
(Customer company workflow not shown)

Source: INPUT

It is possible to superimpose the workflow model on two companies that are trading. Exhibit 5 shows this.

In Exhibit 5, you can see how the workflow design methodology gives a context for EDI messages. It gives "meaning" to the messages. A workflow management software module can look at the messages and determine what work steps need to be done next, what person or application to route messages to, and who or which software process to involve in the next work step.

With the workflow concept, EDI messages become just tokens in a larger workflow. They are not ends in themselves. Today's EDI integration attempts place EDI messages as ends in themselves. This is wrong.

Users implement EDI to be more effective competitors, to have better relationships with customers, and to be more efficient with suppliers—not to transfer files per se. Effective file transfer is a component of a larger objective: to be more competitive.

EDI is a technology that fits into a larger solution. The solution is competitiveness and customer satisfaction. Workflow is a method and technology that allows the organization to design and implement customer satisfaction.

(Continued next month: combining the workflow and EDI architectures) ■

Japan Establishes EDI Council: 39 Industry Associations Adopt Domestic EDI Standard

For those EDI purists who believe that the whole world should adopt a single, universal EDI standard, there is good news and bad news from Japan these days.

The good news is that most industries have decided to adopt a single EDI standard and replace the many proprietary and ad hoc data formats that are currently in use. The bad news is that the adopted standard is unique to Japan and different from the American ANSI X12, the United Nations' EDIFACT, or the other popular European standards (such as ODETTE and Tradacoms).

Until recently, EDI in Japan had been promoted separately in each industry sector. Increasingly, industry groups in Japan saw the necessity of adhering to a common standard with which to communicate among themselves as well as adopting worldwide standards to integrate with global trading partners.

This month, the **Japan Electronic Data Interchange Council** (JEDIC) was established by 39 industry associations in Japan including automobile, machinery, and other major industries. Only the banking, insurance, security, and telecommunications industries have not joined the Council yet, but these industries are expected to join soon.

Many industries are going to introduce the **CII** (Center for the Informatization of Industry) standard, which was released this spring. Industries that will adopt this standard right away are petrochemical, electric power, construction, and distribution. The distribution industry has had its own standard, the **JCA** (Japan Chainstore Association) standard, which is a low-level EDI standard with fixed-length formats. The JCA is now considering upgrading its standard by introducing either EDIFACT or CII. CII is expected to be selected by the Japan Chainstore Association.

With regard to EDIFACT, the current sentiment in Japan now is that it is to be used primarily for dealing internationally with trading partners abroad. The standard is suited for international communications but not for domestic communications among Japanese companies. And now the emphasis is to build EDI linkages in and among Japanese industry sectors.

Furthermore, some Japanese managers think that Japan's voice in the EDIFACT standards body may be ineffective. Japan's EDIFACT committee belongs to the Asia EDIFACT board. The board includes Chinese, Korean, Singapore, Australian, and other groups. The business environments of these areas are "totally different" from Japan and from each other, say these people. Because of this, EDIFACT can only be used in the larger global trading environment and does not accommodate the more specific needs of the Japanese business community.

INPUT believes, therefore, that EDIFACT will not be the major EDI standard in Japan and will only be used for communications with international trading partners.

The reason why the CII standard was developed in Japan (and other existing EDI standards were rejected) was that Japan needed a format that accommodated Kanji characters. Kanji characters require 16-bit character lengths, instead of the usual 7- or 8-bit character lengths of ASCII text, as assumed to be part of the existing EDI standards. ■

NACHA Reports Record Levels of EDI/EFT Activity: INPUT's 1990 Forecast Comes True

This year, corporations are paying each other electronically in record numbers, according to the National Automated Clearinghouse Association (NACHA), the association that oversees the Automated Clearinghouse (ACH).

The NACHA payment formats designed specifically for intercorporate payments are showing record usage. For the first six months of this year, compared with the same period last year, Corporate Trade Payment (CTP) payment volume increased by 17%, Corporate Trade Exchange (CTX) volume grew by 122%, and the total number of remittance addenda (the section of the payment formats—whether CTP, CTX, or CCD+—that is optionally sent over either the ACH or the payor's value-added network) grew by 18%.

William Nelson, NACHA's senior director of network services, explains that the growth is caused by (1) ongoing investment by companies in EDI/EFT software and services, (2) the added profitability that both small and large companies are receiving through streamlined payment procedures, and (3) the push from the federal government's Vendor Express program, which is the way the federal government has begun paying companies that provide services and supplies to it.

The Department of Treasury now sends more than a million CCD+ Vendor Express payments each quarter. More than 70 branches of various government agencies now participate in the program. Eventually, all government agencies are expected to participate.

The surge in financial EDI usage indicates that more than 20 million addenda will be sent across the ACH Network during 1992. While multiple addenda can be attached to the CTX and CTP formats, a single addendum corresponds to a single payment.

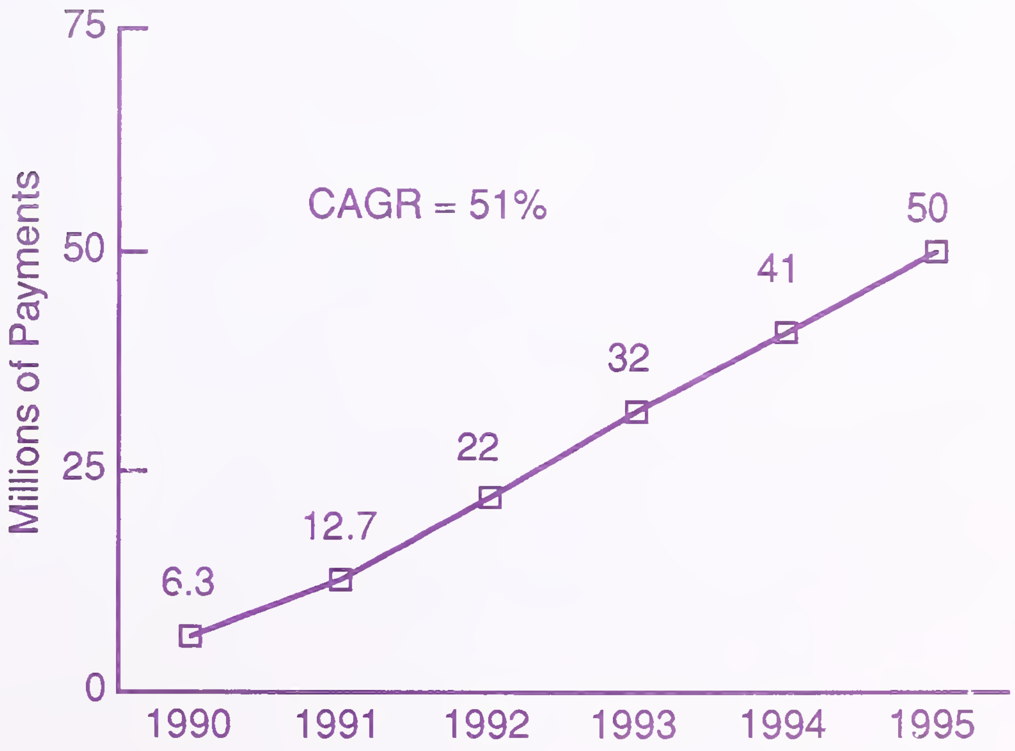
Two years ago, INPUT forecast that EDI/EFT payment volume would be approximately 20 million in 1992. Exhibit 6 shows INPUT's forecast for electronic corporate payment volumes.

While the growth in corporate electronic payments is extraordinary, the current volume represents less than 1% of total

Continued on next page

Exhibit 6

Corporate Electronic Trade Payment Volume Estimate and Forecast



Source: INPUT

NACHA . . . from page 9

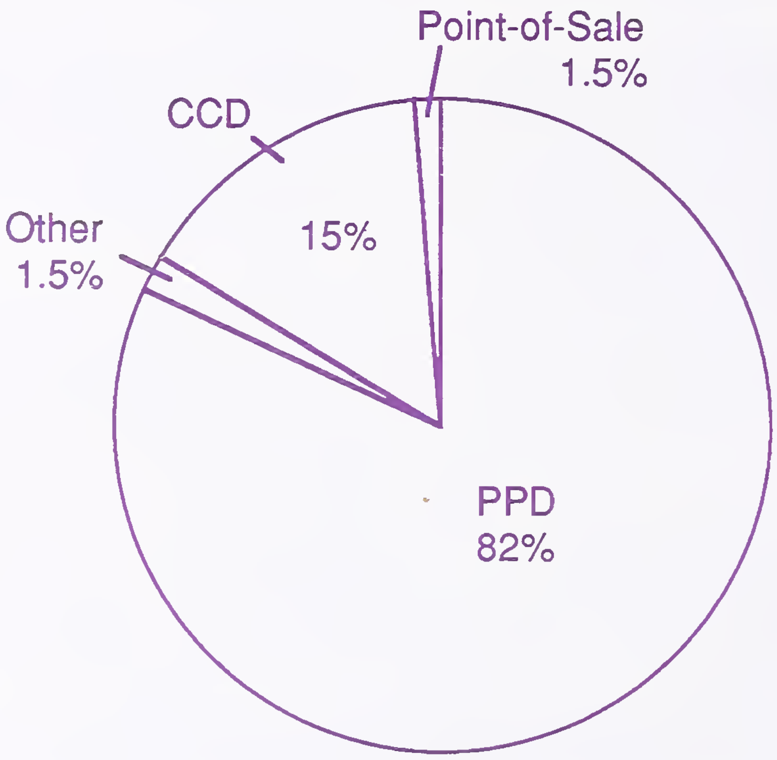
EFT volume of the ACH. Most EFT today is in the form of direct deposit of payroll, consumer payments of utility bills, and insurance premiums (these are classified as Preauthorized Payment and Deposits—PPDs), and funds movements by corporations among different corporate accounts (called Cash Concentration and Disbursements—CCDs).

A breakdown of ACH volumes is shown in Exhibit 7.

Source: William Nelson, NACHA, (703) 742-9190 ■

Exhibit 7

ACH EFT Volumes



Source: *Automated Payments Update*

EDI Used in Vending Machine Systems—"Binge-in-Time"

The automatic merchandising industry—vending machine operators—are adopting electronic standards to help them manage and replenish vending machines. The standards allow operators to quickly pick up data from a machine and download it back to the company's host computer/application. Currently, there are two versions of the standard: an optical character standard (used more in Europe) and a "direct wire" standard where the operator plugs a hand-held device into the vending machine to collect the data (this is used more in the U.S.).

The U.S. standard is based on the DEX UCS standard, an EDI standard developed by the grocery industry under the aegis of the **Uniform Communication Council** (UCC). DEX UCS is one of two general standards of the UCC. It is used for exchanging business information directly from, typically, a hand-held device of a delivery representative and a machine at the retail location. The other UCC standard is the NEX UCS, which covers the data exchanged over networks, the more traditional EDI medium of transmission.

Wireless capture of vending machine data is also in the works and is being offered by such companies as **Motorola** and **Cellular Data Inc.** So far, the 3,000 to 5,000 vending operators in the U.S. have been slow to adopt the wireless technology. Nevertheless, the interest is growing, which parallels a general overhaul of the vending business.

"Vending in the last five years has gone electronic," according to **Larry Eiles**, director of the National Automatic Merchandising Association (Chicago, IL).

Equipment and software suppliers such as **Automatic Products International** (St. Paul, MN), **Coin Acceptors** (St. Louis, MO), and **Compuvend** (New Orleans, MI) are building vending machines with EDI capabilities.

The $25 billion vending machine industry is serviced by large operators such as **ARA**, **Canteen**, **Marriott**, and many large independents.

Contact: Larry Eiles, National Automatic Merchandising Association, (312) 346-0370. ■

News Bits

The U.S. customs authority began testing an EDI program where it receives manifest information from other customs authorities around the world. The test was inaugurated with the Singapore customs authority. Six more countries will be added in the next six months. The movement of data between customs authorities helps the receiving authority identify cargoes coming into its country. It checks the data against the customs clearance entries (requests for clearance) from the local customs brokers. IBM Information Network/Advantis is the principal vendor in this pilot program.

Sterling Software and **Integral Midrange**, a wholly owned subsidiary of Integral (Walnut Creek, CA), have entered into a co-marketing agreement. Integral Midrange will market, install, and support Sterling Gentran 400 EDI management software for its manufacturing and distribution customers.

EDI translation software vendor, **DNS**, has moved into new corporate headquarters (in Burlington, MA). Former vice president of Marketing at DNS, **John Witten**, has left the company.

Comdisco (Rosemont, IL), one of the world's largest lessors of high technology equipment, is using an EDI-like product to bill customers and receive payments. It is using the Customer Originated Electronic Payment service/software from GEIS.

American Business Computer has made a strategic alliance with AT&T/NCR. The alliance is intended to bring integrated EDI solutions to retailers. NCR is one of the market leaders in point-of-sale systems. AT&T, NCR's parent, maintains a value-added network service, called EasyLink, that offers EDI network services.

The National Automated Clearing House Association (NACHA) has released the *820 Implementation Guide*, a publication that will assist corporations and financial institutions in using the new 820 payment order remittance advice. The guide is $35 for NACHA members, $55 for non-members. Phone: (703) 742-9190.

Calendar

January 10-13, 1993, Hyatt Regency, San Antonio, TX, Financial EDI Conference, Treasury Management Association and National Automated Clearinghouse Association, (301) 907-2862

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- Datalaw Project to Address Legal Issues
- Two Books on EDI and the Law

10 ...NEIC, PCS Form Partnership for National Health Care Information Network

EDI Integration Developments

Voice and EDI: Linkages That Increase Sales

Computer-telephone integration trends, including voice response data base access systems, are potential allies for EDI systems. Many EDI users today also employ voice response systems to facilitate communications with trading partners. Many transportation companies, for example, allow customers to check shipment status or tariff schedules either through a computer or telephone access to the same computer data base. At least one EDI translation software vendor, **St. Paul Software**, has begun developing a product that incorporates voice technologies.

Nevertheless, full integration of EDI and voice-processing systems is another two or three years away. INPUT believes that computer-telephone integration is an important trend to watch. Telephone interfaces among companies are more convenient to end users than EDI, although EDI, when fully integrated, provides a more efficient end-to-end data processing capacity. Because of its ease of use, computer-telephone integration is similar to enhanced facsimile services: on top of a basic, easy-to-use, widely installed platform base, more sophisticated functionality can be incrementally added.

Computer-telephone integration (CTI) is the functional integration of human agents and telephone network capabilities; voice and data switching; computers and their applications and data bases; voice processing; and other information media.

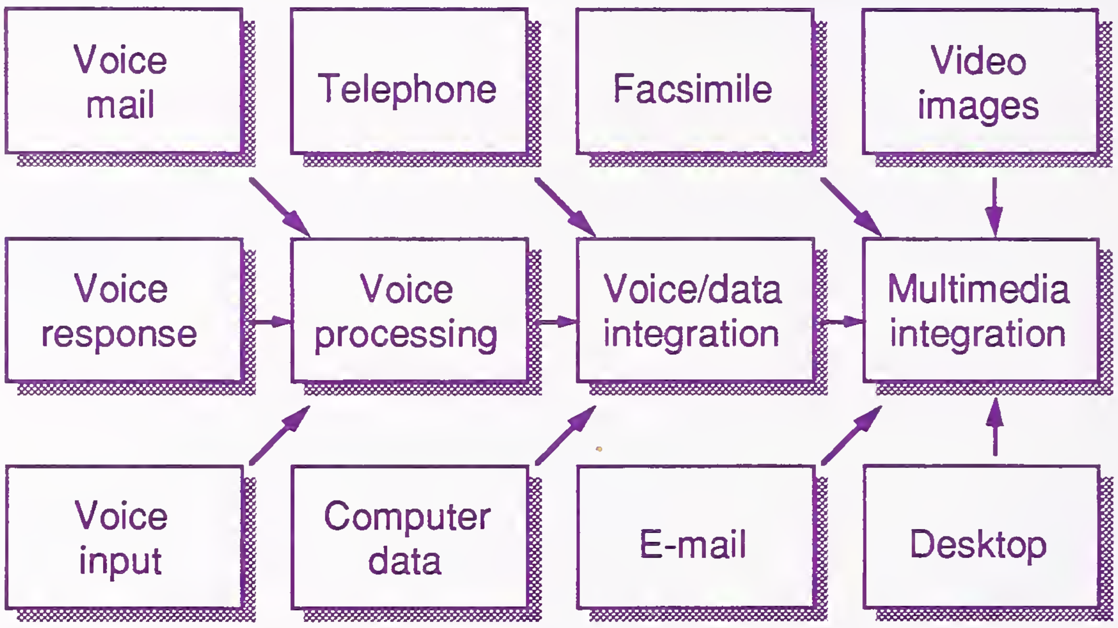
Continued on next page

Developments . . . from page 1

Exhibit 1 shows the various information technologies that are integrated through CTI.

Exhibit 1

The Components of Computer-Telephone Integration



Source: Vanguard Comunications Corporation

Computer-telephone integration allows for (1) easily switching calls and corresponding computer screens within an organization (for example, a customer support department); (2) integrating voice, data, and human interaction in a single call; and (3) delivery of information or access to information, with the information able to be delivered by voice or hard copy.

Some of the applications of computer-telephone integration are listed in Exhibit 2.

Industries that are adopting computer-telephone integration technologies at this time to support commercial activities are insurance, distribution, banks, and transportation companies.

CTI, by definition, links voice communications into a company's computer applications, such as order entry, inventory, or accounting. Already, EDI integration of these kinds of applications has taken place. CTI, therefore, is integrating the same applications that EDI has been integrating.

William Gill of systems integrator **Bridgestone Software USA** (Foster City, CA) says EDI and voice response systems complement each other. Mr. Gill has helped set up phone-accessible tariff data bases for trucking companies. The same companies also receive bills of lading from shippers via EDI.

A basic configuration of CTI and EDI components in a company is shown in Exhibit 3.

Integration of voice and data through CTI, EDI, and other integrated systems will allow more productive sales efforts and a linking of sales directly into the delivery of the company's products.

Companies that are integrating EDI and CTI include **Ingram Micro** (Santa Ana, CA), **Aetna** (Hartford, CT), **The Prudential** (Roseland, NJ), **Quantum Health** (Orange, CA), and **Maxtor Corporation** (San Jose, CA).

Exhibit 2

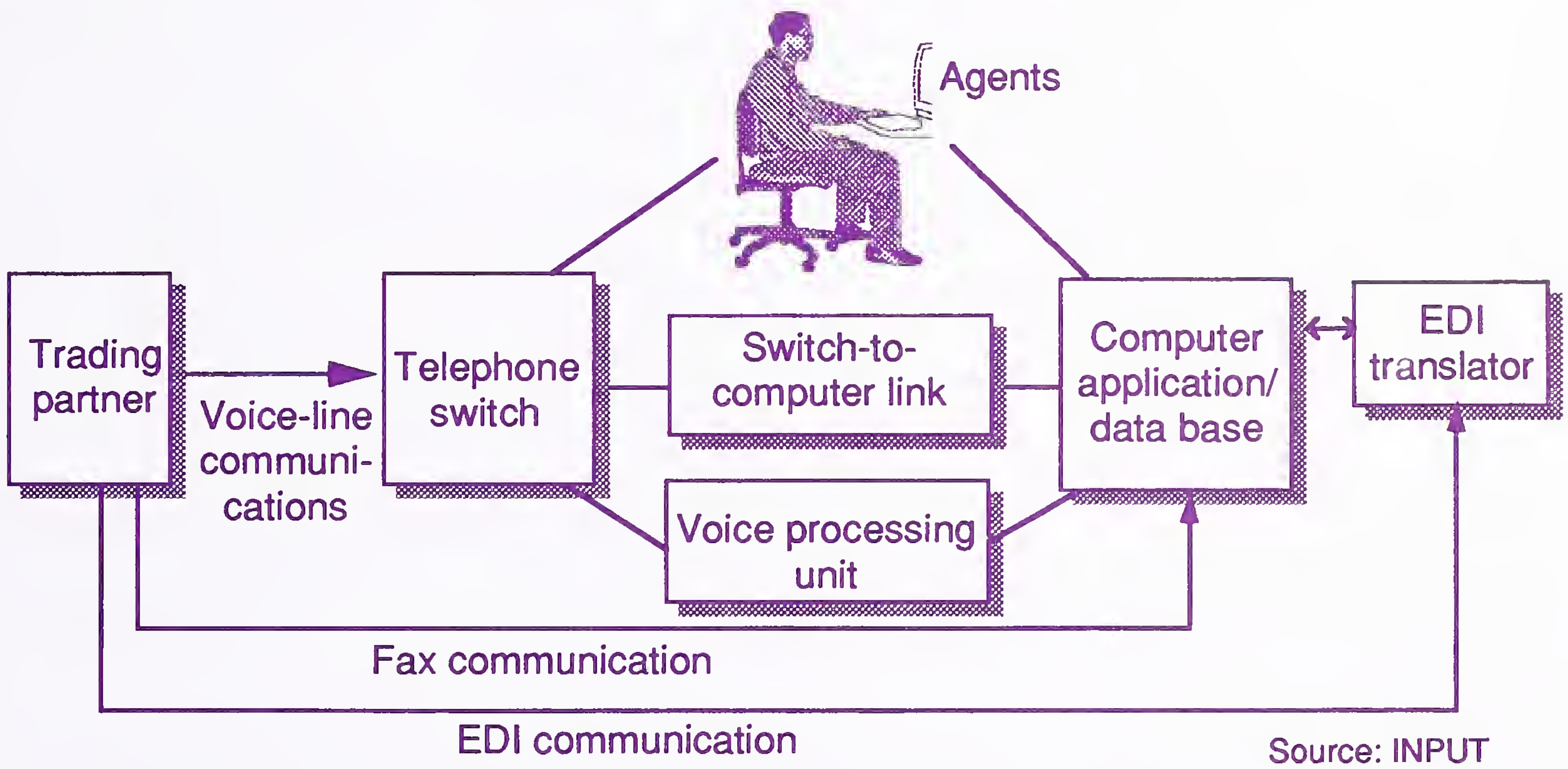
Applications of Computer-Telephone Integration

- Advertising/promotion
  - Product information/catalogs
- Financial services
  - Credit authorization
  - Credit collection
- Customer service
  - Help desks
  - Order/shipment updates
  - Maintenance services
- Marketing/sales
  - Order entry
  - Data base marketing

Source: INPUT

Exhibit 3

CTI and EDI Integration



Source: INPUT

UNIX EDI Software Brings New Systems Integration Gains

UNIX operating system software is technically ideal for EDI systems and the emerging electronic commerce network environment. Hardware independence, inexpensive and fast development/implementation cycles, savings in daily operating expenses, and the breadth of choice offered by UNIX software and service vendors make UNIX an appealing operating system foundation on top of which to build systems that support electronic trading.

Flexibility in developing systems is mandatory because the competitive environment of users is changing rapidly. The ability to put up production applications, have them interconnect with other applications inside and outside the company, and the ability to do so as new business opportunities arise is the name of the game in the 1990s.

Already, in the EDI market, translation software for UNIX environments is showing a rapid, eager acceptance in the marketplace (see INPUT's report, *The U.S. Electronic Data Interchange Market, 1992-1997*).

Exhibit 4 lists some of the leading vendors of EDI UNIX software.

The great advantage of UNIX-based EDI software is that it is hardware independent. Users protect their investment in EDI software because it easily ports from one proprietary hardware system to another (as long as all platforms have a UNIX operating system).

Corporations have heterogeneous hardware environments, they change their hardware infrastructures more quickly than before, and EDI implementation (as an IS project for a large corporation) is usually a slow, multiyear proposition. The flexibility that UNIX offers is a great advantage. UNIX software allows users to incrementally upgrade and expand their EDI facility in accordance with EDI transaction volumes. Application program interfaces, for example, can be retained. UNIX eliminates the redundancy of installing individual

Continued on next page

Developments
. . *from page 3*

Exhibit 4

EDI UNIX Software Vendors

Vendor	UNIX Product Name	Price Range (Dollars)	Systems/OS Supported	Telephone No.
ABC	EDI-Server	50,000 - 300,000	Pyramid, Sequoia, Tandem, Unisys, Altos, IBM RS/6000, Amdahl, NCR Tower, AT&T 3B Systems, HP 9000, Gould, Sequent, Sun Microsystems, DG Aviion	313 930-7840
Blue Rainbow Software Int'l. Corporation	Multinet/UNIX	(Contact vendor)	IBM AIX	800 258-3433
EDS Canada	EDI*Expert	4,000 - 15,000	PC to mainframe	416 290-2700
GEIS	EDI*Transit	9,000 - 41,500	ATT UNIX, Amdahl, Gould, Altos, Data General, Hewlett-Packard, NCR, Pyramid, Sequoia, Unisys, Sequent, Tandem	301 340-4000
Premenos	EDI/e	10,000 - 60,000	IBM RS/6000, HP 9000	510 602-2000
St. Paul Software	Datatran	4,500 - 18,000	-386, NCR, HP 3000, 9000, Sequent, Pyramid, Sequoia	612 641-0963
Sterling Software, Inc.	Gentran for UNIX	7,500 - 42,500	IBM RS/6000, HP/9000 (avail. Dec)	614 793-7000
Trinary Systems	EDI Windows	9,000 - 35,000	DEC Vax, HP 3000, 9000	313 442-8540
Unisys	EaDIplus	14,000 - 35,000	Unisys 6000, AT&T UNIX System V	215 986-2000

Source: INPUT

EDI translators on multiple host-based application systems.

UNIX-based EDI software came out in 1991 and has been selling well, although the user base is (by mid-1992) no more than 100. Typical UNIX-based systems sold to date are mainframe equivalents ranging in price from $20,000 to $200,000. The merits of UNIX are easy to identify in theory, but because of the relatively new and scant experience with UNIX systems, they have not been proven. Nevertheless, INPUT believes that UNIX-based EDI software will become a preferred platform for users above the PC level.

Workflow Architecture Integrates EDI with the Business Process of Trade

(continued from last month)

Today's EDI architecture (translation and mapping software, application software, network services, standardized data formats, and other components) can be made more effective when placed within a larger workflow framework.

Workflow design methodology gives a context for EDI messages. It gives "meaning" to the messages. A workflow management software module can look at the messages and determine what work steps need to be done next, what person or application to route messages to, and who or which software process to involve in the next work step.

Action Technologies workflow architecture integrates one or more client applications (called workflow-enabled applications) and the structures and components that enable them to interact with the workflow management server and receive services from it. The corporate applications that are connected via EDI are one kind of workflow-enabled application. Exhibit 5 shows the major components of a workflow management system.

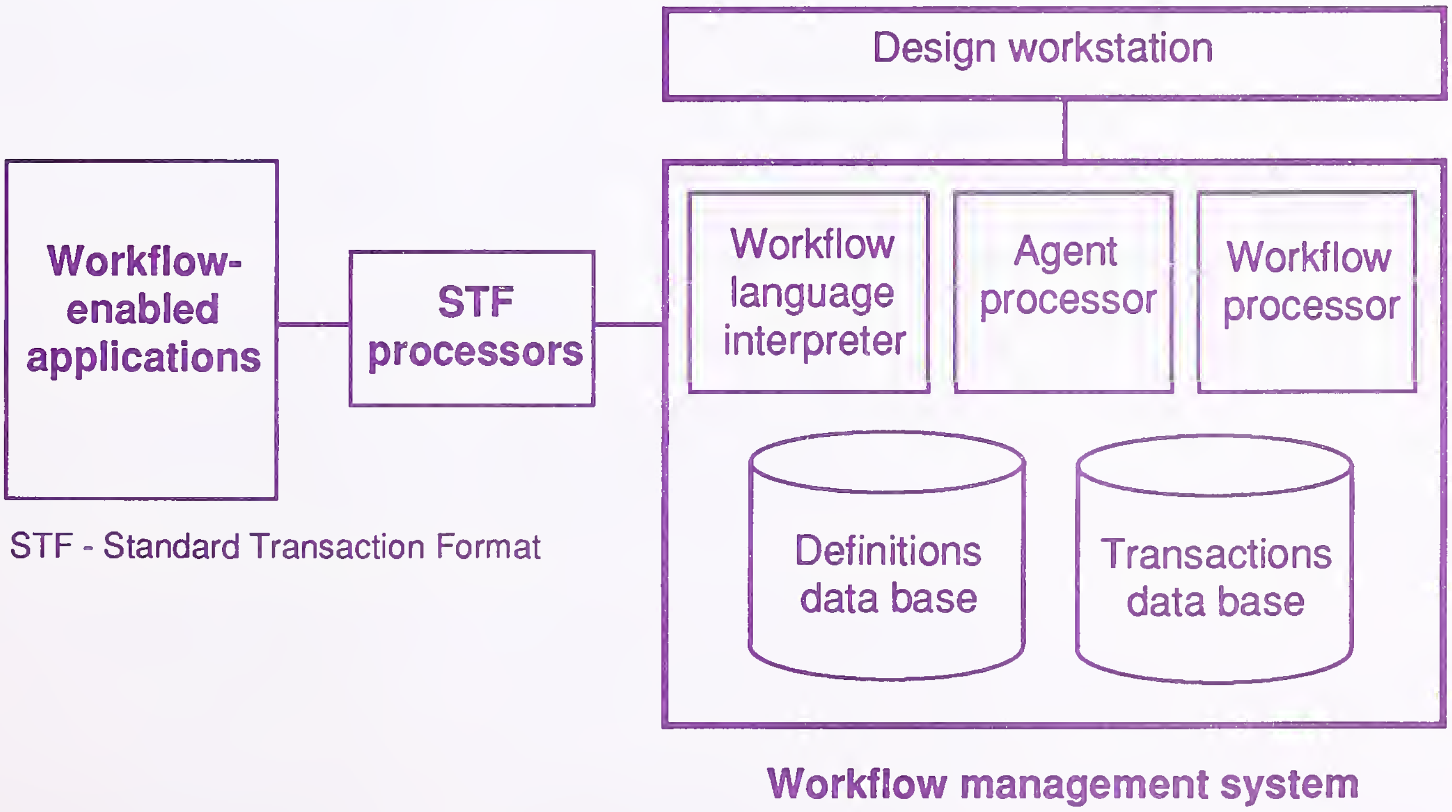
EDI translation software is one kind of standard transaction format (STF) processor in Action's view. Examples of another kind of STF are Lotus Notes and SQL servers, where the client application writes and modifies records in an external data base. Yet a third kind of STF is an interprocess communication interface, where a client application receives services from a server by making a process-to-process service request (a remote procedure call, for example). In this case, the STF structures are embedded in the parameter blocks of the service request and service result calls.

STF processors translate between an application's native data format and the standard transaction format of the work-

Continued on next page

Exhibit 5

Workflow Management System Architecture


Design workstation
Workflow-enabled applications
STF processors
Workflow language interpreter
Agent processor
Workflow processor
Definitions data base
Transactions data base
STF - Standard Transaction Format
Workflow management system

Source: Action Technologies, Inc.

Developments

. . . from page 5

flow language intepreter. STF processors isolate the workflow management system from the interface used by the application and provide a layer for integrating different protocols and technologies.

By providing an appropriate STF processor, any existing data base, messaging, or networking system can be incorporated into a workflow management network. If an application communicates by writing to a data base, for example, the STF processor will read the data base and look for the records that hold STF transactions.

The workflow management system uses stored definitions of the workflow structure and of the history of transactions to interpret and initiate acts. It consists of a number of interacting components:

The *definitions data base* describes the workflow of the organization and, in the case of EDI, it defines the kinds of EDI formats used by trading partners. In effect, the definitions data base contains trading partner profiles in the same way that current EDI translation software does.

The definitions include several basic structures. The core is the set of loop types and action names (see last month's article) with associated forms, for example, the loop type "check customer credit" or "send invoice to customer." The definitions data base also specifies the linking relationships connecting the different loops and the actions to be taken automatically by the agent processor.

The *transactions data base* contains the history of completed workflow loops and workflows-in-progress. It is accessed both for carrying out transactions and for providing status reports and overview.

The *workflow language interpreter* receives service requests from STF processors in the form of workflow language constructs: workflow declarations, workflow actions, and requests for workflow management services (see last month's article). It instructs the workflow processor to calculate workflow states and next actions based on specified criteria (such as the current state of the workflow and the role of the person taking an action).

The *workflow processor* generates and manages transaction records in the transactions data base, which keeps track of the current state and history of the workflow organized according to the component loops and associated completion times.

The *agent processor* maintains a queue of events and times to trigger workflow actions that have been specified in the definition.

The *design workstation* is a separate application that is used to generate, modify, and maintain the definitions. We have developed a graphical notation for high-level workflow maps, and have implemented interactive structured drawing tools for creating and manipulating those maps, which can be used for business process redesign, both with and without workflow management system development.

Using Action's workflow architecture, intercorporate, application-to-application integration using EDI formats is managed by the workflow management system. This is different from today's method of sending messages directly between applications.

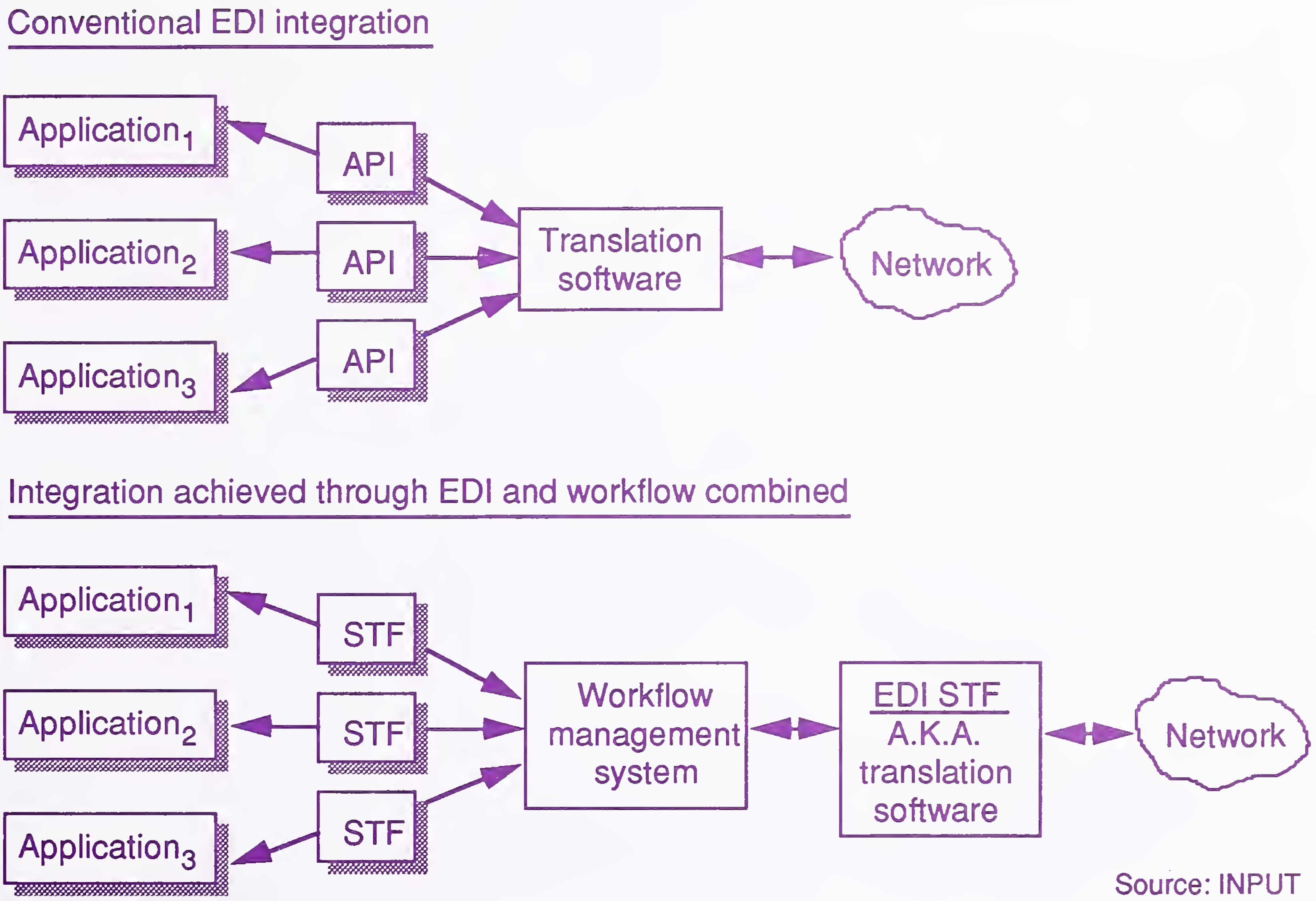
Exhibit 6 shows the current EDI/application integration architecture compared to integration using the workflow architecture.

EDI components fit into workflow in many locations of the workflow model. EDI translation software, as conceived today, partly resides as one kind of STF and partly as definitions in the definition data base of the workflow management system.

Today's EDI translators contain data definitions and roles (in the form of trading partner

Exhibit 6

Business Process Integration—Today's EDI Architecture versus EDI-Workflow Architecture


Conventional EDI integration
Application$_1$
Application$_2$
Application$_3$
API
API
API
Translation software
Network
Integration achieved through EDI and workflow combined
Application$_1$
Application$_2$
Application$_3$
STF
STF
STF
Workflow management system
EDI STF A.K.A. translation software
Network

Source: INPUT

profiles) that are better placed in the workflow manager component.

The STF processor—as an EDI document translator—identifies the customer by checking with the definitions data base and identifies the workflow type (request, promise, etc.). In some cases, the definition data base may reside outside of the organization, such as the UPC catalog data bases that identify product merchandise with unique bar code identifiers.

Exhibit 7 shows the workflow architecture that supports receiving an electronic purchase order.

Legalities Help Shape Electronic Commerce

The rights and responsibilities of EDI trading partners, international trade prohibitions and privileges, the definition of free trade zones inside a country, even the rules and regulations of securities exchanges all have in common that they directly affect how electronic commerce systems will be applied to implement trade.

The legal specification of rights, obligations, properties, and responsibilities creates or disallows ways in which EDI and electronic systems can be applied to business processes.

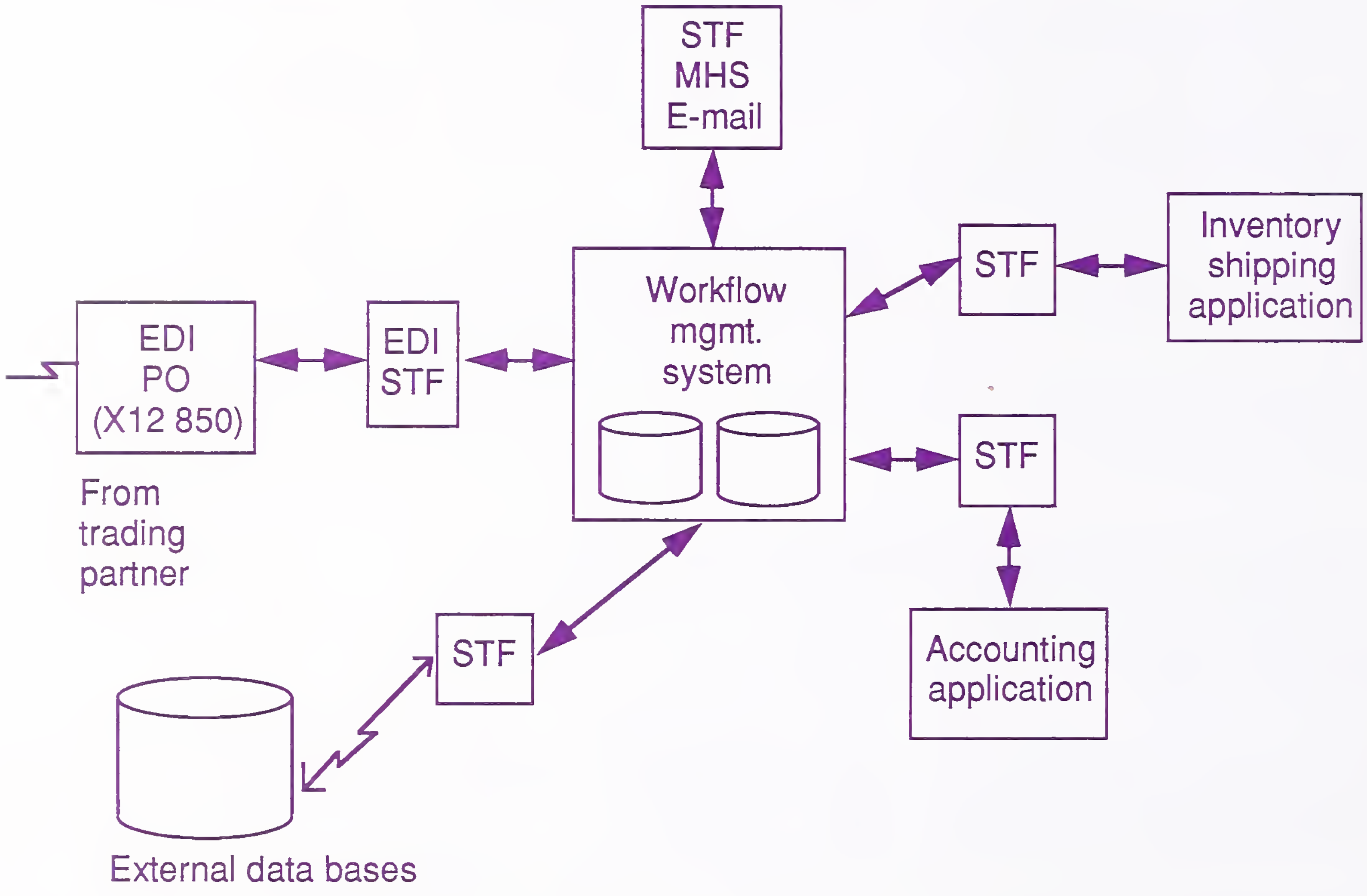
As Nobel Prize-winning economist Ronald Coase points out,

Continued on next page

Developments . . . from page 7

Exhibit 7

Components of a Purchase Order Business Process



(Credit authorization, UPC catalog, community EDI system, trading partner profiles)

Source: INPUT/Action Technologies, Inc.

"Commodity and stock exchanges, often used by economists as examples of a perfect market and perfect competition, are markets in which transactions are highly regulated. They are normally organized by a group of traders (the members of the exchange) which owns or rents the physical facility within which transactions take place. All exchanges regulate the times at which transactions can be made, what can be traded, the responsibilities of the parties, the terms of settlement, and they provide the machinery for the settlement of disputes and impose sanctions against those who infringe the rules of the exchange.

"For perfect competition to exist, an intricate system of rules and regulations is needed."

Recent events illustrate how EDI and electronic commerce applications are heavily reliant on the work of lawyers and law makers.

Datalaw Project to Address Legal Issues of Electronic Commerce

A combined effort of the DISA and the EDIA, called the Datalaw Project, will bring together EDI users and vendors and lawyers to discuss ways in which the commercial code can accomodate the new corporate practices that are resulting from information technology.

For example, when **Wal-Mart** relinquishes its practice of determining its own purchase orders to its suppliers and lets the suppliers determine re-order quantities (based on sales data direct from Wal-Mart point-of-sale cash registers), there is a new set of rights and obligations that needs legal definition. Competitive and confidentiality concerns, for example, must be clarified.

Another, very basic example is the fact that the essential legal trading partner agreement between two trading companies is typically spelled out in the boilerplate on the back of purchase orders and invoices. When these paper documents are replaced by electronic messages, the boilerplate, and the legal rights and responsibilities that it stipulates, disappears. In effect, there is no agreement.

One solution that many of the larger EDI users are pursuing is to spell out the trading partner agreement before any automation has been implemented. The agreement, on paper, is agreed to and each party keeps a copy in their (paper) files. All subsequent EDI trade activity refers to and/or is conducted within the context of this agreement.

Gregory Harter, president of EDIA, spoke at the annual American Bar Association conference recently to motivate the legal community to begin addressing the unprecedented business environment that electronic commerce systems are creating.

Harter, who was instrumental in setting up EDI at Cummins with Ford and is a trained CPA, is no stranger to the issues.

Opinion: Probably more than ever, involving the legal professsion will be a central activity in the electronic commerce world of tomorrow. Why? Because the capacity to operate in a "virtual world" is upon us.

Virtual means an artifact that comes into existence at the time that it is needed. Virtual circuits and virtual memory are examples of this. Virtual organizations are those productive capacities that can be put together to create a certain product at a given time, but hold together only as long as there is a market need for the product.

In more conventional terms, this is called using more contractors than in-house resources. This is certainly a trend in every major manufacturing industry today. For example, Nike doesn't own any shoe factories (or warehouses or retail outlets for that matter). All this is outsourced. Electronic commerce is not necessarily causing this trend but enabling it to happen.

It is the constituting of this virtual world—through negotiation and consensus—that will be key in determining profits, adding value, benefits, markets, etc. Structuring the virtual world involves assigning rights, obligations, property rights, terms and conditions, etc.: the work of lawyers.

Two Books on EDI and the Law

Two books provide good background and practical advice on defining legal relationships between companies using electronic trading systems. **Benjamin Wright**'s *The Law of Electronic Commerce* is published by **Little, Brown and Company.** *Electronic Contracting Law: EDI and Business Transactions,* written by authors **L. J. Kutten, Bernard Reams**, and **Allen Strehler**, is published by **Clark Boardman.** Both books provide the legal/statutory context and interpretation of how EDI, facsimile, E-mail, and other electronic communication technologies can be used to conduct trade. Examples of contracts and other boilerplate documents are provided. ■

NEIC, PCS Form Partnership for National Health Care Information Network

PCS Health Systems Inc., a subsidiary of pharmaceutical distributor **McKesson Corp.**, has been selected by **National Electronic Information Corp.** (NEIC) to help develop and implement a national on-line, real-time health care information network for health care providers and payors. The basic configuration of the network is shown in Exhibit 8.

NEIC is a claims clearinghouse established in 1981 by a consortium of 11 major health insurers. NEIC has experienced tremendous growth in electronically submitted claims: from 10 million in 1988 to 85 million by the end of this year—a 750% increase over four years.

When the expanded health care information network (HCIN) is fully implemented, it will support the following:

- Verification of patient eligibility
- Cost to plan member/amount due
- Prior authorization
- On-line referral service to other health care providers
- Electronic capture and submission of medical claims and encounter data
- Electronic utilization management of clinical criteria
- Real-time delivery of patient drug profiles to physicians
- Electronic submission of prescriptions to pharmacies

Further in the future, HCIN intends to provide

- E-mail
- Transfer of medical records
- Electronic funds transfer

HCIN will be adaptable to all practice-management systems and can be introduced into any health care environment using personal computers or point-of-service technology.

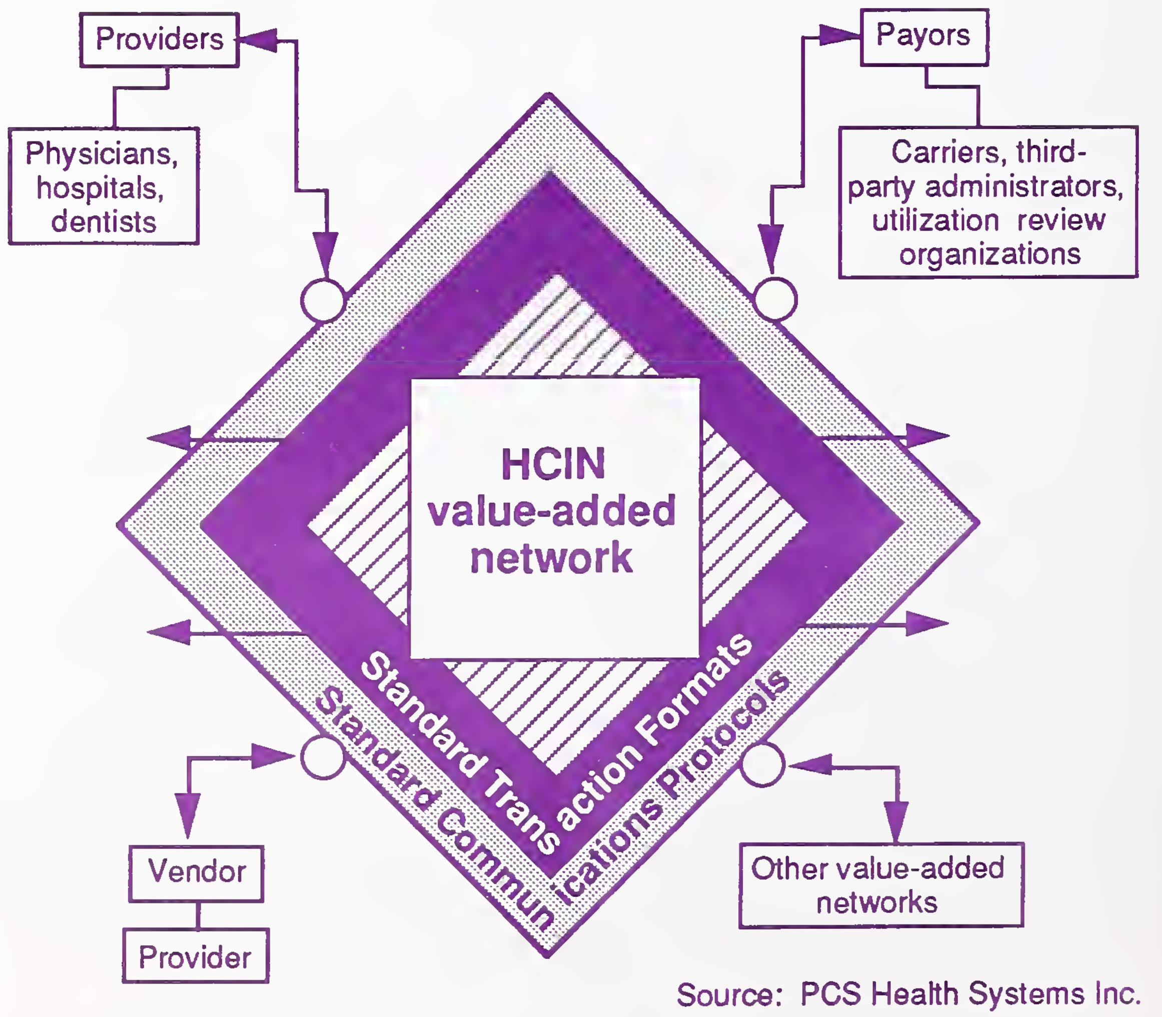
According to **Kenneth O'Donnell**, NEIC president and CEO, "health care business throughout the country will soon be conducted in an on-line manner similar to banking, where people are accustomed to making transactions through automatic teller machines."

PCS is the largest third-party processor of pharmacy insurance claims in the U.S. It pioneered pharmacies' transition to on-line transaction processing.

PCS was chosen by NEIC over other network bidders for HCIN because of its experience in real-time processing. The

Exhibit 8

Health Care Information Network


Providers
Physicians, hospitals, dentists
Payors
Carriers, third-party administrators, utilization review organizations
HCIN value-added network
Standard Transaction Formats
Standard Communications Protocols
Vendor
Provider
Other value-added networks

Source: PCS Health Systems Inc.

Exhibit 9

Players in the U.S. Health Care Industry

Segment	No. of HIBCC Records	Segment	No. of HIBCC Records
Retail Pharmacies	59,338	Other:	
Nursing Homes	15,712	Home Health Corp.	826
Hospitals	10,396	Manufacturers	814
Dist./Wholesalers	6,392	HMOs	694
Buying Groups	2,542	PPOs	601
Clinics	2,429	Group Purchasing Organizations	476
Health Misc.	2,200	Nursing Home Chains	228
Out-Patient Surg. Ctrs.	1,506	Non-Health Misc./ Unallocated	192
		Total Other	3,831
		Total	104,346

Source: Health Industry Business Communications Council

prescription drug benefit serves as a model for standardized, national claims clearing. PCS electronically links more than 52,000 pharmacy providers and 1,200 payors ot its health care network and proprietary information system, called RECAPS^{M} (Remote Electronic Claims Adjudication Process).

There are approximately 100,000 different organizations involved in the U.S. health care industry that could potentially be connected in the HCIN.

Exhibit 9 breaks out the major groups of health care organizations.

INPUT is preparing a report on EDI and health care that will be ready in December. ■

News Bits

Harbinger*EDI (Atlanta, GA) continues to service its market stronghold of utility customers by incorporating a new EDI ANSI invoice into its PC EDI translation software. The invoice (X12 810 format) follows industry-specific guidelines that allows utilities and petroleum suppliers to bill each other.

American Business Computer's (Ann Arbor, MI) EDI translation software products have been authorized by the **Healthcare EDI Corporation**, a consortium of health care providers whose purpose is to help all health-related organizations become EDI capable.

Action Technologies (Alameda, CA) launched the Workflow Institute, which will provide educational courses in workflow methodology for business consultants, systems analysts, and software developers.

The **Chemical Industry Data Exchange** (CIDX) released a Guidelines Manual, outlining the conventions for EDI use by chemical companies and their trading partners. The manual is available from CIDX headquarters at 609-393-7088.

Societe Internationale de Telecommunications Aeronautiques (SITA), the international telecommunications agency for airlines based in Seine, France, released a PC-based EDI software product designed to assist airline companies to electronically procure airline parts. SkyForm is distributed by **Scitor**, a wholly owned subsidiary of SITA, and is used by airlines and aircraft part suppliers for the transmission and receipt of spare part orders, invoices, and other official trading documentation.

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INPUT is a worldwide consulting and market research firm uniquely focused on the information technology services and software markets. Executives in many technically advanced companies in North America, Europe, and Japan rely on INPUT for data, objective analysis, and insightful opinions to support their business plans, market assessments, and technology directions. By leveraging INPUT's considerable knowledge and expertise, clients make informed decisions more quickly, and benefit by saving on the cost of internal research.

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8 .....EDI Growth Is Highest Outside the U.S.

Electronic Payments Rapidly Growing

The 1990s is gearing up to be the decade when private and public sector payments go electronic. In a just completed research investigation, INPUT has determined growth rates for the adoption of electronic payment mechanisms are far in excess of average information services industry rates.

Across the several kinds of electronic payment mechanisms growth is high. INPUT examined paperless mechanisms including EDI/EFT among corporations, home banking/bill paying and electronic tax filing, credit and debit card payments at retail points of sale, payroll processing, electronic benefits transfer by government agencies, and other kinds of specialized bill processing (including freight bill processing and others).

Exhibit 1 classifies the kinds of electronic payment mechanisms.

Electronic payment mechanisms vary according to the payor (who pays the bill) and the payee (who receives payment) and the transaction type.

Corporations, for example, can use direct deposit of payroll mechanisms to electronically pay employees. They can use EDI/EFT to electronically pay suppliers and tax authorities.

Consumers can use credit and debit cards at retail establishments. They can use the new automated banking services (computer-, telephone- and television-based services) or the older pre-authorized debit services to pay bills at home.

Each payment category has its own infrastructure requirements in terms of software, equipment, and information services. Each payment category has its own dynamics in terms of banks and other service providers pursuing customers in the particular category, factors encouraging and inhibiting growth, principal software and equipment suppliers, customer demographics, regulations, and so on.

Continued on next page

Payments...from page 1

The three payor/payee categories (corporate, people, government) can be modified according to where payments are originated: in households, in retail outlets, and in the accounting/treasury departments of corporations and government agencies.

These distinctions are made because government and corporations use the same mechanisms for their respective payment types: EDI/EFT to pay suppliers, automated payroll processing/direct deposit of payroll for paying employees.

People payments are split into two groups: those consumer payments made at home (paying bills) and those payments made in retail outlets (with cash, checks, or cards).

Not all markets for electronic payment services/applications are equally attractive for service providers. Whereas all are growing at rates above normal information services growth rates (in the 20% and 30% and higher ranges versus the IS average in the low teens), some are growing faster than others. While some applications (such as payroll processing) might exhibit high growth, their opportunity may be limited due

Exhibit 1

Kinds of Electronic Payments

		Payor		
		Corporations	People	Government
Payee	Corporations	EDI/EFT trade payments	Preauthorized and automated bill payment Credit/debit cards	Vendor Express
	People	Direct deposit of payroll	N/A	Electronic benefits transfer Payroll
	Government	EDI/EFT tax payments	Electronic tax filing	N/A

N/A = not applicable

Source: INPUT

to a restricted overall potential market, the existence of a few dominant players, or a combination of these and other factors.

Exhibit 2 summarizes the growth in adoption of electronic payment mechanisms for the several payment segments.

The percentages in Exhibit 2 refer to the growth of either transaction volumes for electronic payments or to the number of people adopting payment services or to the number of debit cards to be issued. They do not refer to the growth in vendor revenues of payment services, related software, or equipment.

INPUT believes that the leading and most attractive markets for electronic payment services, software, and equipment are those for

- Corporate-to-corporate payments (EDI/EFT)
- Home banking/bill paying (including all modes—computer, telephone, and television based)
- Retail payments at the point of sale, particularly debit card payments
- Electronic payment of corporate taxes to state and federal authorities

Exhibit 2

Annual Activity Growth Rates for Electronic Payment Applications

		Payor		
		Corporations	People	Government
Payee	Corporations	33%	Home: 111% Retail: 38%	33%
	People	32%	N/A	25%
	Government	50% - 100%	32%	N/A

N/A = not applicable

Source: INPUT

Exhibit 3 summarizes INPUT's assessments of the opportunities for electronic payment services.

The corporate-to-corporate EDI/EFT payment segment shows high opportunity because it is, relative to some of the other fields, a new kind of payment mechanism. First started in the mid-1980s by auto manufacturers, it has developed slowly. But in the last two years a greater number of "hub" type companies—in retail, manufacturing, petroleum, utilities, and government—have begun instituting EDI/EFT payments. A critical mass of hub and spoke companies has been attained that can carry over and stimulate adoption by other companies in other industries that trade with these initial adopters.

The EDI/EFT segment is made more attractive by the relative absence of any dominant

Continued on next page

Payments. . . from page 3

players. Hundreds of banks, a score of software companies, and a handful of value-added networks are offering services in this niche. Not one has emerged as the all-service provider.

The home market is also a high-growth market for electronic payment services. The market is young and many generations of systems are yet to come. Computer-, telephone-, and television-based payment systems exist today. No one medium has the advantage yet. With the technology of these three media rapidly evolving, it is very possible that in the close future, the three will converge into a single video-telephone-computer. Payment services out of the home will have to respond to this changing technological dynamic.

Home electronic bill-paying systems and services are being driven also by the increasing numbers of professionals and small businesses that operate out of the home. Also, electronic bill payment systems and services for the home are being driven by the rapid growth of home shopping services (again via the three media, but in particular via television). As home shopping becomes more widely practiced, home electronic payment of bills will follow.

Exhibit 3

Bank and IS Vendor Opportunity Rankings for Electronic Payment Applications

		Payor		
		Corporations	People	Government
Payee	Corporations	High	Home: High Retail: High	Medium
	People	Low to medium	N/A	Medium
	Government	Medium to high	Medium	N/A

N/A = not applicable

Source: INPUT

In the retail segment—people paying corporations at the point of sale (POS) at retail outlets—there is a great potential for growth. Growth here is coming in the areas of debit cards, whose use has begun at the consumer's two most frequented retail points: the grocery store and the gasoline station. Also, growth is coming from new retail segments, in particular, health care. There appears to be a large potential for point-of-sale card payment systems and services in health care (for both credit and debit cards, and even smart cards).

The next most lucrative opportunity for electronic payment systems and services is in the area of corporate tax payments to state and federal government agencies. This is a medium-to-high opportunity area in INPUT's judgment. It is high because state governments are mandating, or will shortly mandate, electronic tax payments (given certain qualifications) by corporations. It may be a limited market, however, compared to the corporate-to-corporate and consumer payment segments.

The government-to-corporate segment (government paying its suppliers electronically) is a component of the corporate-to-corporate payment market. Although growing at the same rate and having the certainty of a government mandate behind it, it is only a medium opportunity because experience to date with the federal government's Vendor Express has been unspectacular. Government contracts with IS and financial service vendors can take advantage of scale discounts and other exceptions. This special status of government projects makes them a less attractive opportunity than those in the commercial and consumer sectors.

Payroll processing and direct deposit of payroll, though growing at a strong clip, is a low-to-medium opportunity because it is an established industry niche with established players. The technology and infrastructure is largely in place, so there is no opportunity in developing the infrastructure. It is only a matter of bringing on more employers and employees to the existing systems.

Electronic benefit transfers appears to be a medium opportunity. The fickleness of government welfare programs may impinge on this sector, providing a steady expansion of opportunity.

Tax preparation services and electronically filing of taxes for individuals appears to be a steadily and quickly growing area. Though quickly growing, it has established players, which makes it a challenging market to enter. ■

Bank and IS/IT Vendor Strategies Are All over the Map

Providers of networks are in central positions because they carry the traffic of transactions, which is only increasing. The networks for electronic payments range from EDI value-added networks, POS debit/ATM networks, credit card authorization and processing networks, bank clearinghouse networks, to telephone, cable television, and wireless networks.

Software and equipment vendors face many opportunities, but many of their opportunities are reliant on network services.

Banks are somewhat caught in a bind in that many of the new electronic payment services (EDI/EFT and debit cards, especially) do not offer lucrative profits—at least right away. The opportunities for banks with electronic payment services are in the areas of enhancing customer satisfaction, increasing the number of bank customers, and introducing/bundling other bank services to existing service customers (particularly credit services).

Whereas network traffic will rise indefinitely, the number of network providers in each category of network is consolidating.

Owners of these networks are looking for ways to leverage them by adding more processing and value-added services to them and to exploit new potentials among their existing customer bases.

Some credit card processing companies, such as National Data Corporation, are offering EDI/EFT services. First Financial Management Corp. could do the same.

Some EDI value-added networks are offering EDI/EFT services (either directly to corporate customers or through alliances with banks) as well as credit card processing services.

Continued on next page

Bank and IS/IT. . .*from page 5*

GEIS, BT North America, and AT&T are examples of this.

Television and telephone networks, such as AT&T and TV Answer, are offering home banking services in conjunction with banks.

ATM/POS networks, such as Maryland National Bank and its MOST ATM network, are offering debit services not only to retail establishments but to homes as well.

Credit card processors are offering telephone calling cards (so that the telephone charge appears on the credit card's monthly statement, not the telephone company's monthly statement).

Telephone companies, such as AT&T, Ameritech, GTE, are offering credit cards.

And some commercial and consumer information network services companies , such as Prodigy and America Online, are offering home electronic payment services.

Network operators and banks are wise to seek and exploit new service and customer add-ons to their business. The payment mechanisms are converging to some extent because corporations, consumers, and the government are naturally intertwined (by virtue of continually transacting with each other). Electronic communication technologies only bring these groups closer together. Electronic communication technologies eliminate the paper processing institutions that have given rise to and have kept isolated the different kinds of payment practices. Now, the inherent interconnectedness of the three categories of payor/payee can be matched more closely with digital systems keeping records of transactions.

For more information on INPUT's new report, *Opportunities in Electronic Payments,* call Mark Drisko or Paul Kendrick at INPUT's California office: 415-961-3300. ■

Users of Home Banking May Receive EDI/EFT Data Formats

There is no use of EDI by homes/consumers at this time. However, there may be in the future as there is truly a case to be made for it. The leading home electronic bill-paying service bureaus, CheckFree and Prodigy BillPay USA, are considering the use of EDI/EFT remittance advices.

Where large companies bill millions of consumers by sending them a statement/ remittance advices, such as telephone and credit card bills, an ANSI X12 820 standard remittance advice data format could be effective. The billing company would send the statement detail to the consumer household's E-mailbox. Either the billing company would send it directly to the household or to the service bureau (BillPay, CheckFree, etc.) and the service bureau would send it to the consumer's electronic mail box. The consumer would review it and then authorize the payment service to pay the bill. The entire process would never use a piece of paper.

As with all EDI, what is needed is a single large hub company to which hundreds of thousands of consumers make payments. This will make the investment in EDI software and integration worthwhile. However, there are only perhaps a half million thousand households using electronic payment services in total. There are certainly no single billers that all of these households pay. Not until a couple million households use electronic services will the first universally paid biller appear.

Probably only a hundred or so companies in the U.S. send bills to a base of nationally dispersed consumers large enough to make it a candidate for EDI transmission of bills. Telephone companies operate regionally, and therefore, the critical mass won't arrive until there are millions in a single region that are using electronic payment services.

Profile: Prodigy BillPay USA

Prodigy BillPay USA service is available to Prodigy members only. Membership restrictions of Prodigy apply, therefore, to BillPay prospects. Most importantly, businesses are prohibited from joining Prodigy. It is a strictly home/consumer service. This is because of the agreements that Prodigy has with publishers and advertisers.

Therefore, BillPay is not currently being targeted to small businesses, according to company spokespersons. This may change in the future. However, electronic payments such as BillPay provides are contrary to business accounting practices where paper is used as an audit trail. Businesses want their voided checks returned to them for record keeping purposes. Also, with the home banking method, it is difficult to set up a business user because it is hard to verify if the person has the authority to initiate a payment and debit from the given account (which would be a corporate account).

Chemical Bank processes the payments for BillPay. When Prodigy users log on to BillPay, they are in fact routed over to Chemical Bank's mainframe computers. Account files are kept on these computers. Users use a password to get into their accounts. They then set up payees and initiate payments.

Chemical takes the payment instruction, debits the person's account, then sends the payment by one of three methods depending on who the payee is. It either (1) cuts a paper check and mails it, (2) sends an electronic credit via the Automated Clearinghouse (ACH) to the payee's bank, or (3) sends a lock box credit through the ACH to the payee's bank. The latter two ways are electronic.

To use the electronic methods, Chemical must have account and bank identification numbers to send the money and prenotify the account holder that it will send funds electronically to it. Either the BillPay user provides this information or else Chemical has it already (as in the case of very popular payments by BillPay members, such as the major credit card issuers, insurance companies, etc.).

When Chemical Bank managers notice that there are payees who receive lots of payments from BillPay users, they will call directly to these payees and solicit the bank and account information so that the money can be sent electronically. Approximately 60% of BillPay's payments are sent out by check while 40% are sent electronically.

Issues of Home Payment Services

- Home payment services is still a nascent industry. Competition is not among service providers but between the electronic service (independent of provider) and paper checks. More entrants into the market at this time actually increases market growth in that it helps the education process and gives users/prospects a level of comfort knowing that there are several providers to choose from.
- No single payment mechanism will prevail. Households will continue to use several mechanisms: credit cards, debit cards, preauthorized electronic debits, electronic services (including simultaneous use of systems based on the computer, the phone, and the television).
- It is difficult for a consumer bill-paying service to migrate to small businesses because

Continued on next page

Home Banking. . .*from page 7*

of the accounting methods and procedures they use that rely on paper documents. Also, businesses are unwilling to support dual methods, electronic and paper, side by side.

- EDI can play a role in bill statement remittance transmission between merchant and household and between bank and service bureau.

- Adoption of EDI or other standard formats is needed, but more household users must be attained before necessary critical mass warrants such an infrastructure investment on the part of merchants (billers), service bureaus, software vendors to households, and banks. ■

EDI Growth Is Highest Outside the U.S.

EDI is being adopted in Asia and Europe at faster rates than in the U.S., according to a recent investigation by INPUT.

Over the next five years, the number of companies in the world that use electronic data interchange to communicate with trading partners will grow from approximately 38,000 today to about 70,000 in 1997 for a compound annual growth rate of 13%.

Expenditures on EDI translation software, network services, and professional services purchased in a market (and not counting salaries and development expenditures internal to the firm) are expected to rise from a little over $620 million dollars today to $25 billion dollars by 1997 for a compound annual growth rate of 33%.

These assessments are detailed in INPUT's new report, *International EDI Markets, 1992-1997.*

The worldwide EDI market expenditures on software and services are shown in Exhibit 4.

The top three EDI-using countries are the U.S., the U.K., and Japan, and together they account for 68% of total world spending on EDI software and services purchased on the market.

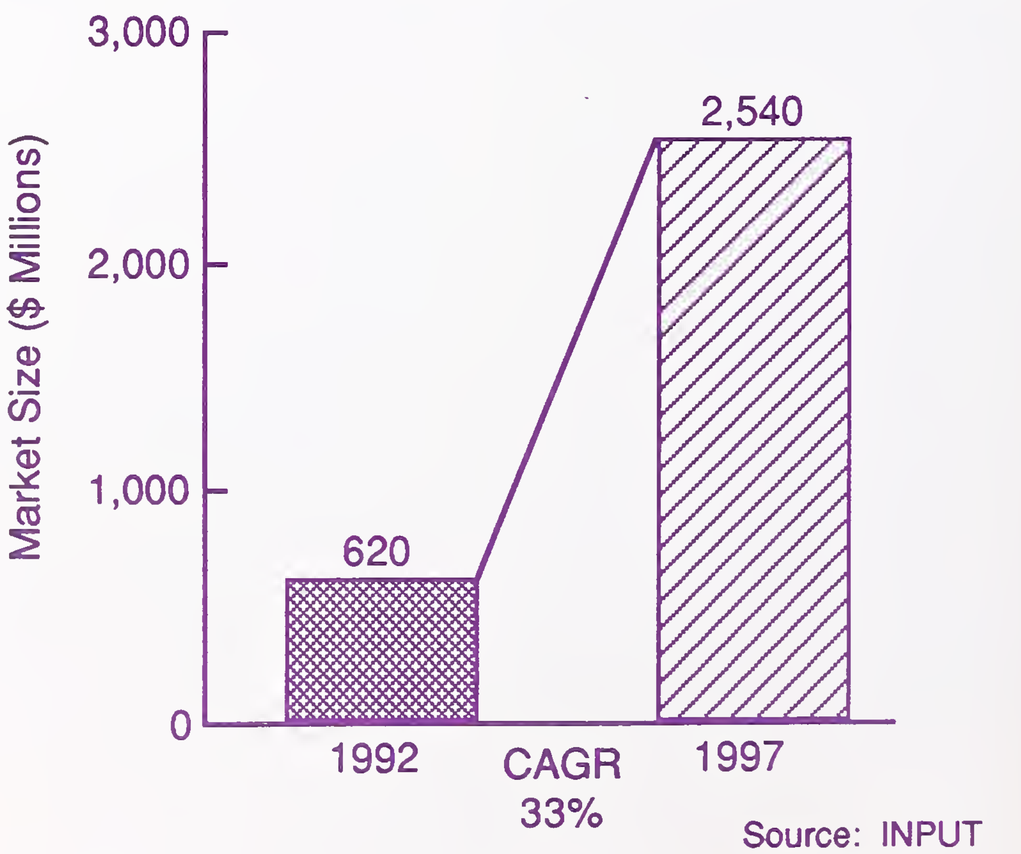
By region, more than half of the worldwide EDI market expenditures are made in North America, as shown in Exhibit 5.

Over the next five years, EDI will grow more rapidly outside North America.

While a number of multinational auto, electronic, apparel,

Exhibit 4

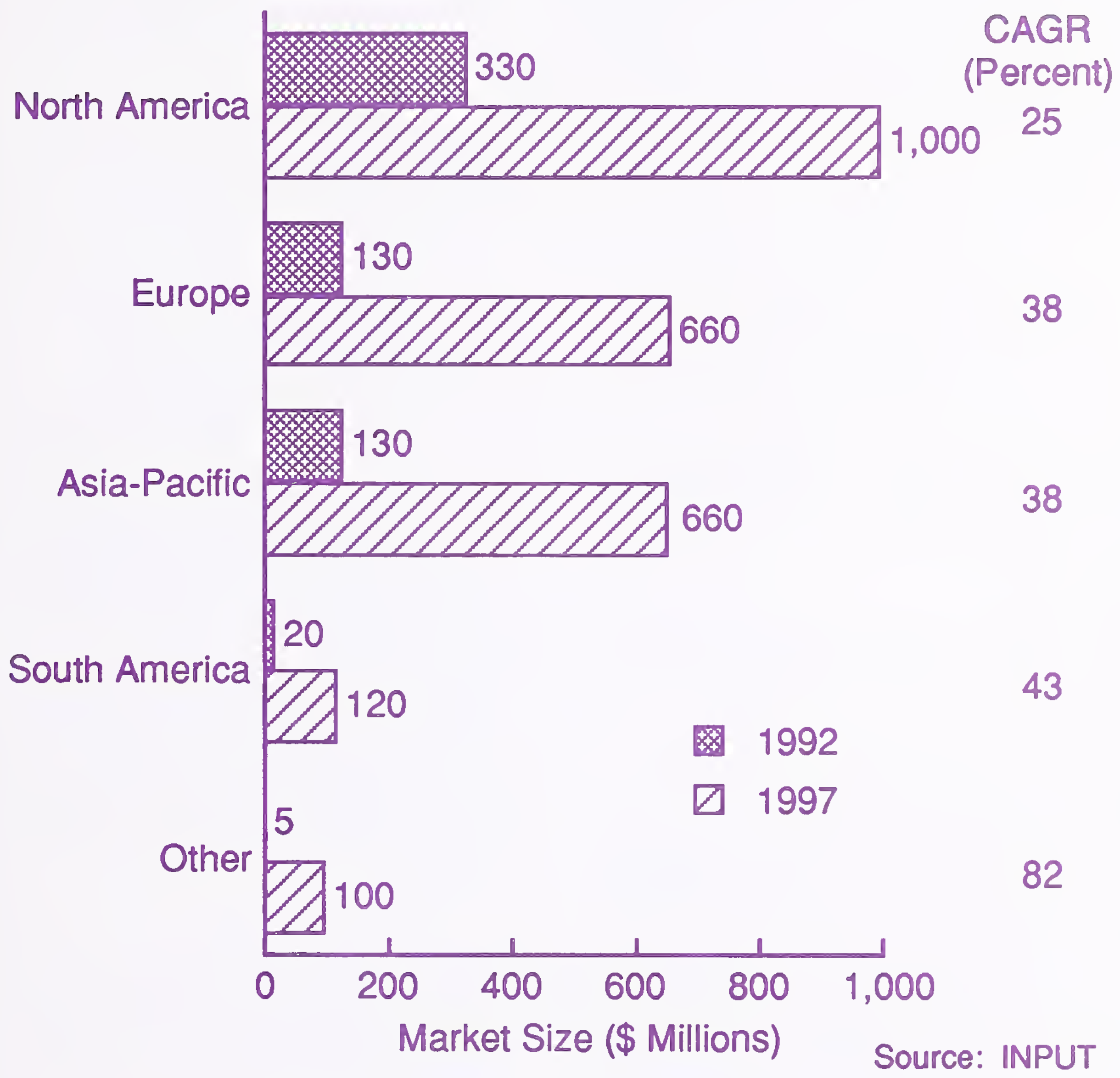
Worldwide EDI Market, 1992-1997



Source: INPUT

Exhibit 5

World EDI Market Growth by Region



Source: INPUT

chemical manufacturers, transportation companies, and port authorities are conducting truly international EDI, the vast majority of EDI activity is confined within the borders of a nation. Thus, the global EDI market consists of several relatively insulated national and sub-national markets.

The "provincial" use of EDI makes sense because EDI typically grows first between a hub company and its most important suppliers, which are typically within the same country. EDI starts local and moves out from there. The plurality of self-contained national EDI markets underscores EDI's relative infancy as a business communication mode. If it were more widely used (and even in its most advanced markets of the U.S., U.K., and Japan it is not), it would have more of an international application. At this point, however, it is not a common business practice.

The provincial use of EDI also helps explain recent developments in EDI standards. In 1992, the Japanese trade standards body finally sanctioned a data format to be used in Japan for EDI. The format was not EDIFACT, the UN standard that, a few years ago, people believed would supplant all earlier EDI formats. Japan's CII standard is an indigenously developed standard that accomodates the many unique requirements of Japanese domestic trade (one of them being the use of Kanji charaacters) and is compatible with existing Japanese EDI standards, notably the Japan Chainstore Association, the Electronics Industries Association of Japan, and the Zengin (banking) standards.

Although EDIFACT will probably be used for international trade purposes, national, sub-national, and industry-specific EDI standards continue to be used by companies and in large numbers. A single "universal" EDI standard, used with a company's trading partner down the street as well as across the globe, will probably not be realized. Localization of data and business practices will always be a reality.

Continued on next page

EDI Growth

. . .from page 9

Worldwide, the most obvious stimuli for EDI activity are two often interconnected political-economic phenomena: the quality level of a country's telecommunications infrastructure and the national government agenda.

These two are obviously closely tied for, in most countries of the world, the national telephone system is state run.

Investment in telecommunications is the top priority of many governments of the world today, especially those of East Asia, Southern Europe, Eastern Europe, and South America. John Allen, CEO and president of AT&T, foresees more money invested in the world's telecommunication infrastructure in the next 10 years than was invested since the telephone was invented. A global, fiber optic, and wireless telecommunications infrastructure will set the groundwork for global EDI.

The developing, export-driven countries of the world see telecommunications as the key to entering into world commerce and prosperity. EDI is explicitly a part of their telecommunication plans. As a corollary, where telecommunication infrastructures are poor (as in South America, China, India, Spain, Portugal, and Greece), there is little EDI activity.

Besides directly investing in telecommunications, governments are also impacting telecommunication, and hence EDI infrastructure, by how they choose to regulate or deregulate telecommunications. In the U.K., the U.S., Japan, Australia, New Zealand, Mexico, and Canada, governments have ended (in varying degrees) the monopolies of the respective national telephone company. This opening up of the telecommunication industry has allowed a myriad of companies to provide EDI network services.

GEIS, AT&T, many of the U.S. regional Bell companies, British Telecom, Cable & Wireless, IBM Information Network (Advantis), EDS, SITA/Scitor (the consortium network of airlines), SWIFT (the international bank settlement network), and even indigenous banks are offering EDI network services around the world in many national markets. NTT, the Japanese telephone company and a logical candidate to offer worldwide EDI network services, seems content at this time to focus its EDI offerings on the domestic Japanese market.

There are other government agendas, besides telecommunications policy, that encourage EDI. In the United States, a crisis in ballooning health care costs and deficiencies has mobilized government and industry consortia to find solutions. The adoption of EDI by hospitals, clinics, physicians offices, insurers, pharmaceutical and medical supply vendors, corporations, and health care service providers is receiving widespread attention and has become in the past three years a torrent of activity.

In the export-driven "mini-dragon" economies of East Asia (Singapore, Hong Kong, Taiwan, South Korea, and now Malaysia, Thailand, the Philippines, and Indonesia), governments have targeted the automating of trade and transportation procedures with EDI. These governments see EDI as a strategic objective in maintaining the nation's capacity as an inexpensive, efficient manufacturing locale.

Also, tax filing and payment (by corporations and individuals) is an EDI application that is being promoted by governments in the U.S., Western Europe, and East Asia.

Although an important one, government is not the only stimuli for EDI development. Streamlining the trade procedures between the manufacturer and its suppliers, its distributors, and its transportation carriers is the most common objective worldwide for EDI. That is, companies involved in manufacturing, distribution, and transportation constitute the core user base of EDI.

Other uses of EDI, for example, in universities, real estate, and temporary employment agencies, demonstrate the diversity of EDI application.

Financial EDI, or the electronic settlement of payment between trading entities, is still very slow in being adopted worldwide. The U.K., Canada, the U.S., and Australia are the most advanced countries in EDI payments, but the total number of companies conducting some degree of financial EDI is probably less than 1,000. (This is not counting the many other forms of EFT.)

Use of EDI by retailers has been rapidly growing in the past two years in the U.S., Canada, the U.K., France, and Australia.

For more details about the worldwide status and development of EDI, see INPUT's recent report, *International EDI Markets, 1992-1997*. Call 415-961-3300 and ask for Mark Drisko or Paul Kendrick. ■

News Bits

CalRep Bankcorp (Bakersfield, CA) licensed Harbinger*EDI's InTouch Cash Manager PC-based software product. CalRep will use the software to make available electronic banking products to its corporate and small business customers throughout the central valley of California.

Chrysler is now using messaging software from American Business Computer to send CAD/CAM files between its engineering departments and its suppliers. The software, ABC*CAD, runs on PC-DOS and UNIX platforms and works in conjunction with Chrysler's CTX mailbox network. Twenty suppliers are currently transmitting CAD files with ABC*CAD and Chrysler plans to add 200 more.

Vision 2000 Ltd., a consortium of Canada's information and telecommunication companies, is launching an effort to integrate facsimile, electronic mail, and voice technologies and establish fax networks in the North American region. The consortium is also working to develop multimedia fax, X.400-based store-and-forward services, fax networks, and switches.

Sterling Software Inc. released GENTRAN ViewPoint, a systems management application software package for mainframe versions of Sterling's GENTRAN EDI software. ViewPoint reports on critical events in EDI processing based on the user's operations criteria. Future releases of ViewPoint, according to Sterling, will provide for tracking and monitoring EDI activities and performance.

• •

Calendar

January 10-13, Hyatt Regency, San Antonio, TX, Financial EDI Conference, Treasury Management Association and National Automated Clearing House Association, (301) 907-2862.

April 14-16, San Antonio Marriott Rivercenter, San Antonio, TX, Electronic Data Interchange '93, Data Interchange Standards Association (DISA), (703) 548-7005.

May 3-5, Boston, MA, The Workflow Conference on Business Process Technology, The Workflow Institute, 510-769-9627.

September 13-16, Hyatt Regency Bethesda, Washington, DC, EDI for Government, USPDI, Inc., (301) 445-4405.

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Electronic Payments Rapidly Growing

The 1990s is gearing up to be the decade when private and public sector payments go electronic. In a just completed research investigation, INPUT has determined growth rates for the adoption of electronic payment mechanisms are far in excess of average information services industry rates.

Across the several kinds of electronic payment mechanisms growth is high. INPUT examined paperless mechanisms including EDI/EFT among corporations, home banking/bill paying and electronic tax filing, credit and debit card payments at retail points of sale, payroll processing, electronic benefits transfer by government agencies, and other kinds of specialized bill processing (including freight bill processing and others).

Exhibit 1 classifies the kinds of electronic payment mechanisms.

Electronic payment mechanisms vary according to the payor (who pays the bill) and the payee (who receives payment) and the transaction type.

Corporations, for example, can use direct deposit of payroll mechanisms to electronically pay employees. They can use EDI/EFT to electronically pay suppliers and tax authorities.

Consumers can use credit and debit cards at retail establishments. They can use the new automated banking services (computer-, telephone- and television-based services) or the older pre-authorized debit services to pay bills at home.

Each payment category has its own infrastructure requirements in terms of software, equipment, and information services. Each payment category has its own dynamics in terms of banks and other service providers pursuing customers in the particular category, factors encouraging and inhibiting growth, principal software and equipment suppliers, customer demographics, regulations, and so on.

Continued on next page

Payments. . .*from page 1*

The three payor/payee categories (corporate, people, government) can be modified according to where payments are originated: in households, in retail outlets, and in the accounting/treasury departments of corporations and government agencies.

These distinctions are made because government and corporations use the same mechanisms for their respective payment types: EDI/EFT to pay suppliers, automated payroll processing/direct deposit of payroll for paying employees.

People payments are split into two groups: those consumer payments made at home (paying bills) and those payments made in retail outlets (with cash, checks, or cards).

Not all markets for electronic payment services/applications are equally attractive for service providers. Whereas all are growing at rates above normal information services growth rates (in the 20% and 30% and higher ranges versus the IS average in the low teens), some are growing faster than others. While some applications (such as payroll processing) might exhibit high growth, their opportunity may be limited due

Exhibit 1

Kinds of Electronic Payments

		Payor		
		Corporations	People	Government
Payee	Corporations	EDI/EFT trade payments	Preauthorized and automated bill payment Credit/debit cards	Vendor Express
	People	Direct deposit of payroll	N/A	Electronic benefits transfer Payroll
	Government	EDI/EFT tax payments	Electronic tax filing	N/A

N/A = not applicable

Source: INPUT

to a restricted overall potential market, the existence of a few dominant players, or a combination of these and other factors.

Exhibit 2 summarizes the growth in adoption of electronic payment mechanisms for the several payment segments.

The percentages in Exhibit 2 refer to the growth of either transaction volumes for electronic payments or to the number of people adopting payment services or to the number of debit cards to be issued. They do not refer to the growth in vendor revenues of payment services, related software, or equipment.

INPUT believes that the leading and most attractive markets for electronic payment services, software, and equipment are those for

- Corporate-to-corporate payments (EDI/EFT)
- Home banking/bill paying (including all modes—computer, telephone, and television based)
- Retail payments at the point of sale, particularly debit card payments
- Electronic payment of corporate taxes to state and federal authorities

Exhibit 2

Annual Activity Growth Rates for Electronic Payment Applications

		Payor		
		Corporations	People	Government
Payee	Corporations	33%	Home: 111% Retail: 38%	33%
	People	32%	N/A	25%
	Government	50% - 100%	32%	N/A

N/A = not applicable

Source: INPUT

Exhibit 3 summarizes INPUT's assessments of the opportunities for electronic payment services.

The corporate-to-corporate EDI/EFT payment segment shows high opportunity because it is, relative to some of the other fields, a new kind of payment mechanism. First started in the mid-1980s by auto manufacturers, it has developed slowly. But in the last two years a greater number of "hub" type companies—in retail, manufacturing, petroleum, utilities, and government—have begun instituting EDI/EFT payments. A critical mass of hub and spoke companies has been attained that can carry over and stimulate adoption by other companies in other industries that trade with these initial adopters.

The EDI/EFT segment is made more attractive by the relative absence of any dominant

Continued on next page

Payments. . . *from page 3*

players. Hundreds of banks, a score of software companies, and a handful of value-added networks are offering services in this niche. Not one has emerged as the all-service provider.

The home market is also a high-growth market for electronic payment services. The market is young and many generations of systems are yet to come. Computer-, telephone-, and television-based payment systems exist today. No one medium has the advantage yet. With the technology of these three media rapidly evolving, it is very possible that in the close future, the three will converge into a single video-telephone-computer. Payment services out of the home will have to respond to this changing technological dynamic.

Home electronic bill-paying systems and services are being driven also by the increasing numbers of professionals and small businesses that operate out of the home. Also, electronic bill payment systems and services for the home are being driven by the rapid growth of home shopping services (again via the three media, but in particular via television). As home shopping becomes more widely practiced, home electronic payment of bills will follow.

Exhibit 3

Bank and IS Vendor Opportunity Rankings for Electronic Payment Applications

		Payor		
		Corporations	People	Government
Payee	Corporations	High	Home: High Retail: High	Medium
	People	Low to medium	N/A	Medium
	Government	Medium to high	Medium	N/A

N/A = not applicable

Source: INPUT

In the retail segment—people paying corporations at the point of sale (POS) at retail outlets—there is a great potential for growth. Growth here is coming in the areas of debit cards, whose use has begun at the consumer's two most frequented retail points: the grocery store and the gasoline station. Also, growth is coming from new retail segments, in particular, health care. There appears to be a large potential for point-of-sale card payment systems and services in health care (for both credit and debit cards, and even smart cards).

The next most lucrative opportunity for electronic payment systems and services is in the area of corporate tax payments to state and federal government agencies. This is a medium-to-high opportunity area in INPUT's judgment. It is high because state governments are mandating, or will shortly mandate, electronic tax payments (given certain qualifications) by corporations. It may be a limited market, however, compared to the corporate-to-corporate and consumer payment segments.

The government-to-corporate segment (government paying its suppliers electronically) is a component of the corporate-to-corporate payment market. Although growing at the same rate and having the certainty of a government mandate behind it, it is only a medium opportunity because experience to date with the federal government's Vendor Express has been unspectacular. Government contracts with IS and financial service vendors can take advantage of scale discounts and other exceptions. This special status of government projects makes them a less attractive opportunity than those in the commercial and consumer sectors.

Payroll processing and direct deposit of payroll, though growing at a strong clip, is a low-to-medium opportunity because it is an established industry niche with established players. The technology and infrastructure is largely in place, so there is no opportunity in developing the infrastructure. It is only a matter of bringing on more employers and employees to the existing systems.

Electronic benefit transfers appears to be a medium opportunity. The fickleness of government welfare programs may impinge on this sector, providing a steady expansion of opportunity.

Tax preparation services and electronically filing of taxes for individuals appears to be a steadily and quickly growing area. Though quickly growing, it has established players, which makes it a challenging market to enter. ■

Bank and IS/IT Vendor Strategies Are All over the Map

Providers of networks are in central positions because they carry the traffic of transactions, which is only increasing. The networks for electronic payments range from EDI value-added networks, POS debit/ATM networks, credit card authorization and processing networks, bank clearinghouse networks, to telephone, cable television, and wireless networks.

Software and equipment vendors face many opportunities, but many of their opportunities are reliant on network services.

Banks are somewhat caught in a bind in that many of the new electronic payment services (EDI/EFT and debit cards, especially) do not offer lucrative profits—at least right away. The opportunities for banks with electronic payment services are in the areas of enhancing customer satisfaction, increasing the number of bank customers, and introducing/bundling other bank services to existing service customers (particularly credit services).

Whereas network traffic will rise indefinitely, the number of network providers in each category of network is consolidating.

Owners of these networks are looking for ways to leverage them by adding more processing and value-added services to them and to exploit new potentials among their existing customer bases.

Some credit card processing companies, such as National Data Corporation, are offering EDI/EFT services. First Financial Management Corp. could do the same.

Some EDI value-added networks are offering EDI/EFT services (either directly to corporate customers or through alliances with banks) as well as credit card processing services.

Continued on next page

Bank and IS/IT...*from page 5*

GEIS, BT North America, and AT&T are examples of this.

Television and telephone networks, such as AT&T and TV Answer, are offering home banking services in conjunction with banks.

ATM/POS networks, such as Maryland National Bank and its MOST ATM network, are offering debit services not only to retail establishments but to homes as well.

Credit card processors are offering telephone calling cards (so that the telephone charge appears on the credit card's monthly statement, not the telephone company's monthly statement).

Telephone companies, such as AT&T, Ameritech, GTE, are offering credit cards.

And some commercial and consumer information network services companies , such as Prodigy and America Online, are offering home electronic payment services.

Network operators and banks are wise to seek and exploit new service and customer add-ons to their business. The payment mechanisms are converging to some extent because corporations, consumers, and the government are naturally intertwined (by virtue of continually transacting with each other). Electronic communication technologies only bring these groups closer together. Electronic communication technologies eliminate the paper processing institutions that have given rise to and have kept isolated the different kinds of payment practices. Now, the inherent interconnectedness of the three categories of payor/payee can be matched more closely with digital systems keeping records of transactions.

For more information on INPUT's new report, *Opportunities in Electronic Payments*, call Mark Drisko or Paul Kendrick at INPUT's California office: 415-961-3300. ■

Users of Home Banking May Receive EDI/EFT Data Formats

There is no use of EDI by homes/consumers at this time. However, there may be in the future as there is truly a case to be made for it. The leading home electronic bill-paying service bureaus, CheckFree and Prodigy BillPay USA, are considering the use of EDI/EFT remittance advices.

Where large companies bill millions of consumers by sending them a statement/ remittance advices, such as telephone and credit card bills, an ANSI X12 820 standard remittance advice data format could be effective. The billing company would send the statement detail to the consumer household's E-mailbox. Either the billing company would send it directly to the household or to the service bureau (BillPay, CheckFree, etc.) and the service bureau would send it to the consumer's electronic mail box. The consumer would review it and then authorize the payment service to pay the bill. The entire process would never use a piece of paper.

As with all EDI, what is needed is a single large hub company to which hundreds of thousands of consumers make payments. This will make the investment in EDI software and integration worthwhile. However, there are only perhaps a half million thousand households using electronic payment services in total. There are certainly no single billers that all of these households pay. Not until a couple million households use electronic services will the first universally paid biller appear.

Probably only a hundred or so companies in the U.S. send bills to a base of nationally dispersed consumers large enough to make it a candidate for EDI transmission of bills. Telephone companies operate regionally, and therefore, the critical mass won't arrive until there are millions in a single region that are using electronic payment services.

Profile: Prodigy BillPay USA

Prodigy BillPay USA service is available to Prodigy members only. Membership restrictions of Prodigy apply, therefore, to BillPay prospects. Most importantly, businesses are prohibited from joining Prodigy. It is a strictly home/consumer service. This is because of the agreements that Prodigy has with publishers and advertisers.

Therefore, BillPay is not currently being targeted to small businesses, according to company spokespersons. This may change in the future. However, electronic payments such as BillPay provides are contrary to business accounting practices where paper is used as an audit trail. Businesses want their voided checks returned to them for record keeping purposes. Also, with the home banking method, it is difficult to set up a business user because it is hard to verify if the person has the authority to initiate a payment and debit from the given account (which would be a corporate account).

Chemical Bank processes the payments for BillPay. When Prodigy users log on to BillPay, they are in fact routed over to Chemical Bank's mainframe computers. Account files are kept on these computers. Users use a password to get into their accounts. They then set up payees and initiate payments.

Chemical takes the payment instruction, debits the person's account, then sends the payment by one of three methods depending on who the payee is. It either (1) cuts a paper check and mails it, (2) sends an electronic credit via the Automated Clearinghouse (ACH) to the payee's bank, or (3) sends a lock box credit through the ACH to the payee's bank. The latter two ways are electronic.

To use the electronic methods, Chemical must have account and bank identification numbers to send the money and prenotify the account holder that it will send funds electronically to it. Either the BillPay user provides this information or else Chemical has it already (as in the case of very popular payments by BillPay members, such as the major credit card issuers, insurance companies, etc.).

When Chemical Bank managers notice that there are payees who receive lots of payments from BillPay users, they will call directly to these payees and solicit the bank and account information so that the money can be sent electronically. Approximately 60% of BillPay's payments are sent out by check while 40% are sent electronically.

Issues of Home Payment Services

- Home payment services is still a nascent industry. Competition is not among service providers but between the electronic service (independent of provider) and paper checks. More entrants into the market at this time actually increases market growth in that it helps the education process and gives users/prospects a level of comfort knowing that there are several providers to choose from.
- No single payment mechanism will prevail. Households will continue to use several mechanisms: credit cards, debit cards, preauthorized electronic debits, electronic services (including simultaneous use of systems based on the computer, the phone, and the television).
- It is difficult for a consumer bill-paying service to migrate to small businesses because

Continued on next page

Home Banking. . .*from page 7*

of the accounting methods and procedures they use that rely on paper documents. Also, businesses are unwilling to support dual methods, electronic and paper, side by side.

- EDI can play a role in bill statement remittance transmission between merchant and household and between bank and service bureau.
- Adoption of EDI or other standard formats is needed, but more household users must be attained before necessary critical mass warrants such an infrastructure investment on the part of merchants (billers), service bureaus, software vendors to households, and banks. ■

EDI Growth Is Highest Outside the U.S.

EDI is being adopted in Asia and Europe at faster rates than in the U.S., according to a recent investigation by INPUT.

Over the next five years, the number of companies in the world that use electronic data interchange to communicate with trading partners will grow from approximately 38,000 today to about 70,000 in 1997 for a compound annual growth rate of 13%.

Expenditures on EDI translation software, network services, and professional services purchased in a market (and not counting salaries and development expenditures internal to the firm) are expected to rise from a little over $620 million dollars today to $25 billion dollars by 1997 for a compound annual growth rate of 33%.

These assessments are detailed in INPUT's new report, *International EDI Markets, 1992-1997*.

The worldwide EDI market expenditures on software and services are shown in Exhibit 4.

The top three EDI-using countries are the U.S., the U.K., and Japan, and together they account for 68% of total world spending on EDI software and services purchased on the market.

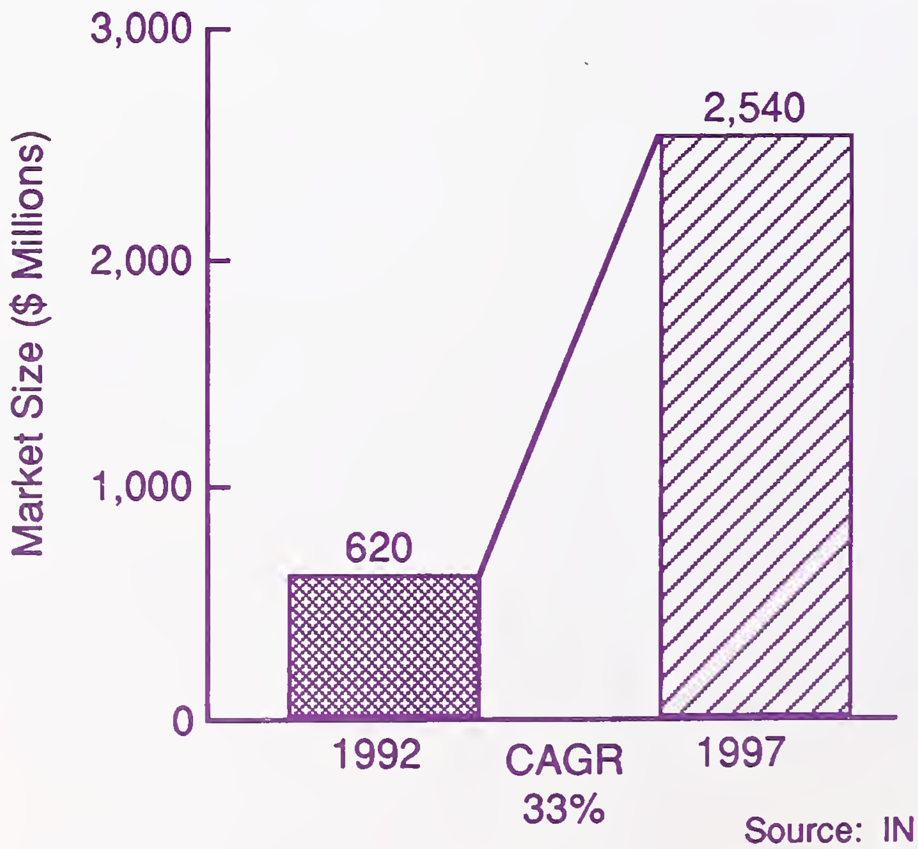
By region, more than half of the worldwide EDI market expenditures are made in North America, as shown in Exhibit 5.

Over the next five years, EDI will grow more rapidly outside North America.

While a number of multinational auto, electronic, apparel,

Exhibit 4

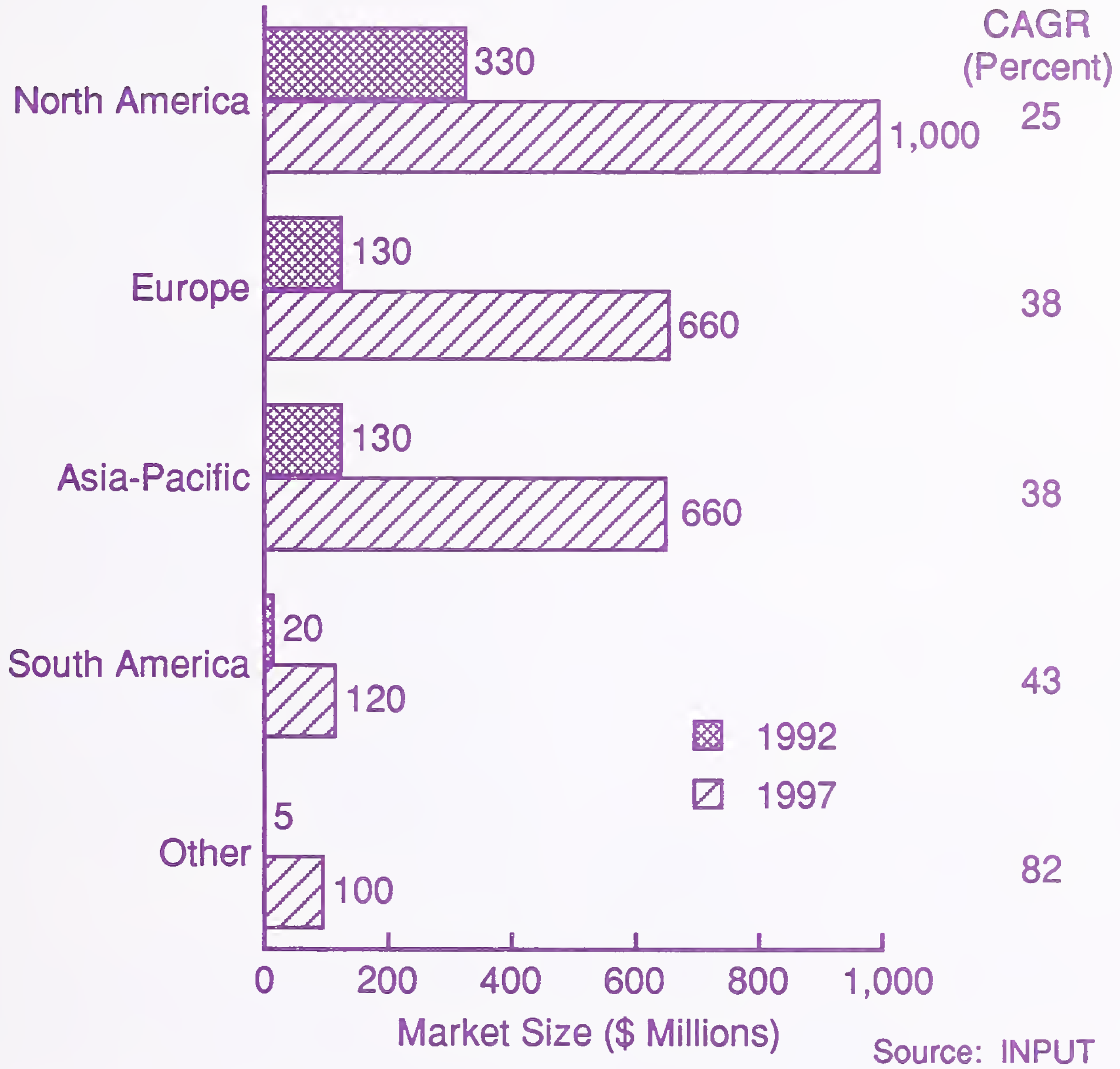
Worldwide EDI Market, 1992-1997



Source: INPUT

Exhibit 5

World EDI Market Growth by Region



Source: INPUT

chemical manufacturers, transportation companies, and port authorities are conducting truly international EDI, the vast majority of EDI activity is confined within the borders of a nation. Thus, the global EDI market consists of several relatively insulated national and sub-national markets.

The "provincial" use of EDI makes sense because EDI typically grows first between a hub company and its most important suppliers, which are typically within the same country. EDI starts local and moves out from there. The plurality of self-contained national EDI markets underscores EDI's relative infancy as a business communication mode. If it were more widely used (and even in its most advanced markets of the U.S., U.K., and Japan it is not), it would have more of an international application. At this point, however, it is not a common business practice.

The provincial use of EDI also helps explain recent developments in EDI standards. In 1992, the Japanese trade standards body finally sanctioned a data format to be used in Japan for EDI. The format was not EDIFACT, the UN standard that, a few years ago, people believed would supplant all earlier EDI formats. Japan's CII standard is an indigenously developed standard that accomodates the many unique requirements of Japanese domestic trade (one of them being the use of Kanji charaacters) and is compatible with existing Japanese EDI standards, notably the Japan Chainstore Association, the Electronics Industries Association of Japan, and the Zengin (banking) standards.

Although EDIFACT will probably be used for international trade purposes, national, sub-national, and industry-specific EDI standards continue to be used by companies and in large numbers. A single "universal" EDI standard, used with a company's trading partner down the street as well as across the globe, will probably not be realized. Localization of data and business practices will always be a reality.

Continued on next page

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